A 26-year-old woman is evaluated in the clinic due to absence of her last 3 menstrual periods. The patient has also developed bilateral milky nipple discharge. Menarche was at age 13. Until now, she has had regular menses, lasting 4-5 days, every 28 days. The patient says she takes acetaminophen for occasional headaches and a medication that "stops the voices" in her head. BMI is 29 kg/m^2. Pelvic examination is unremarkable. Urine β-hCG testing is negative. Interruption of which of the following central nervous system pathways is the most likely cause of this patient's presenting symptoms?

- A. Arcuate fasciculus
- B. Hypothalamospinal tract
- C. Lateral medullary spinothalamic tract
- D. Mesolimbic pathway
- E. Nigrostriatal pathway
- F. Tuberoinfundibular pathway

Submit

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A 26-year-old woman is evaluated in the clinic due to absence of her last 3 menstrual periods. The patient has also developed bilateral milky nipple discharge. Menarche was at age 13. Until now, she has had regular menses, lasting 4-5 days, every 28 days. The patient says she takes acetaminophen for occasional headaches and a medication that "stops the voices" in her head. BMI is 29 kg/m^2. Pelvic examination is unremarkable. Urine β-hCG testing is negative. Interruption of which of the following central nervous system pathways is the most likely cause of this patient's presenting symptoms?

- A. Arcuate fasciculus (1%)
- B. Hypothalamospinal tract (8%)
- ✗ C. Lateral medullary spinothalamic tract (0%)
- D. Mesolimbic pathway (9%)
- E. Nigrostriatal pathway (12%)
- ✓ F. Tuberoinfundibular pathway (67%)

Incorrect
Correct answer
F

67%
Answered correctly

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Explanation

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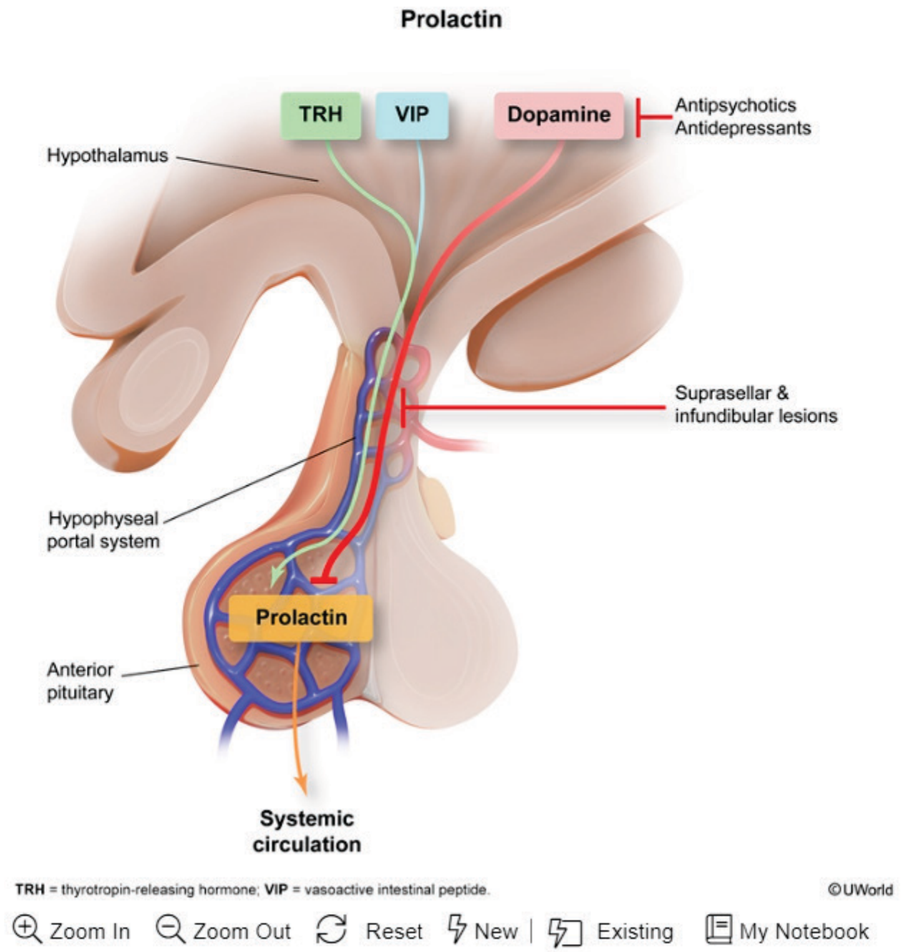

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This patient likely has developed amenorrhea and galactorrhea as an adverse effect of dopamine-2 (D2) receptor blockade from treatment with antipsychotics. There are 4 major dopaminergic pathways in the brain (eg, mesolimbic, mesocortical, tuberoinfundibular, nigrostriatal); dopamine hyperactivity in the mesolimbic pathway is associated with positive psychotic symptoms (eg hallucinations, delusions).

The side effects of antipsychotic therapy are largely caused by D2 receptor blockade in other dopaminergic pathways. The **tuberoinfundibular pathway** connects the hypothalamus to the pituitary gland and is responsible for the tonic inhibition of prolactin secretion. Neurons in the arcuate nucleus of the hypothalamus secrete dopamine, which binds to D2 receptors on pituitary lactotrophs, resulting in decreased prolactin secretion from the anterior pituitary gland. Antipsychotics can interrupt the tuberoinfundibular pathway, causing increased blood prolactin levels **(hyperprolactinemia)**, which may lead to **galactorrhea** (milky nipple discharge unrelated to pregnancy/breastfeeding) and menstrual irregularities (eg, **amenorrhea**).

(Choice A) The arcuate fasciculus is a neural pathway that connects the Broca and Wernicke areas, which are responsible for expressive and receptive language, respectively. Disruption of the arcuate fasciculus classically results in conduction aphasia, characterized by fluent speech, intact comprehension, and impaired repetition.

(Choice B) The hypothalamospinal tract projects from the hypothalamus to the ciliospinal center of the intermediolateral cell column (T1-L2), providing sympathetic innervation to the ipsilateral eye and face. Disruption of this tract typically results in ipsilateral Horner syndrome (eg, ptosis, miosis, anhidrosis).

(Choice C) The lateral medullary spinothalamic tract transmits pain and temperature signals from the contralateral body to the thalamus. Lateral medullary infarction (Wallenberg syndrome) presents with loss of pain and temperature sensation on the contralateral body and ipsilateral face as well as vertigo, hoarseness, dysphagia, and abnormal eye movements.

(Choice D) The therapeutic effect of antipsychotics arises from blockade D2 receptors in the mesolimbic pathway.

(Choice E) The nigrostriatal pathway projects from the substantia nigra to the caudate nucleus and putamen and primarily regulates the coordination of voluntary movements. D2 receptor blockade in this pathway results in

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pathways. The **tuberoinfundibular pathway** connects the hypothalamus to the pituitary gland and is responsible for the tonic inhibition of prolactin secretion. Neurons in the arcuate nucleus of the hypothalamus secrete dopamine, which binds to D2 receptors on pituitary lactotrophs, resulting in decreased prolactin secretion from the anterior pituitary gland. Antipsychotics can interrupt the tuberoinfundibular pathway, causing increased blood prolactin levels **(hyperprolactinemia)**, which may lead to **galactorrhea** (milky nipple discharge unrelated to pregnancy/breastfeeding) and menstrual irregularities (eg, **amenorrhea**).

(Choice A) The arcuate fasciculus is a neural pathway that connects the Broca and Wernicke areas, which are responsible for expressive and receptive language, respectively. Disruption of the arcuate fasciculus classically results in conduction aphasia, characterized by fluent speech, intact comprehension, and impaired repetition.

(Choice B) The hypothalamospinal tract projects from the hypothalamus to the ciliospinal center of the intermediolateral cell column (T1-L2), providing sympathetic innervation to the ipsilateral eye and face. Disruption of this tract typically results in ipsilateral Horner syndrome (eg, ptosis, miosis, anhidrosis).

(Choice C) The lateral medullary spinothalamic tract transmits pain and temperature signals from the contralateral body to the thalamus. Lateral medullary infarction (Wallenberg syndrome) presents with loss of pain and temperature sensation on the contralateral body and ipsilateral face as well as vertigo, hoarseness, dysphagia, and abnormal eye movements.

(Choice D) The therapeutic effect of antipsychotics arises from blockade D2 receptors in the mesolimbic pathway.

(Choice E) The nigrostriatal pathway projects from the substantia nigra to the caudate nucleus and putamen and primarily regulates the coordination of voluntary movements. D2 receptor blockade in this pathway results in extrapyramidal effects (eg, dystonia, akathisia, tardive dyskinesia) and drug-induced parkinsonism.

Educational objective:
Antipsychotic medications work by blocking dopamine-2 receptors in the mesolimbic dopamine pathway. Dopamine-2 receptor blockade in the tuberoinfundibular pathway can result in galactorrhea and amenorrhea.

References

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anterior pituitary

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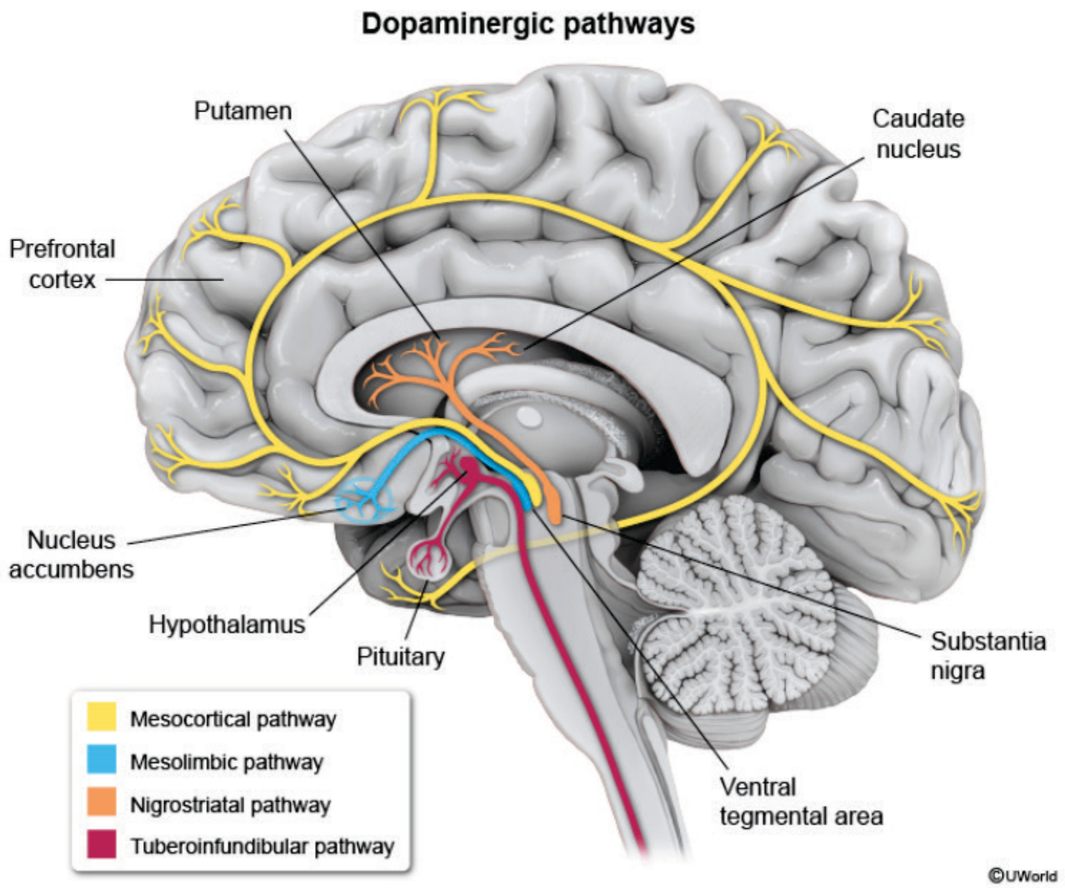

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(Choice C) The lateral medullary spinothalamic tract transmits pain and temperature signals from the contralateral

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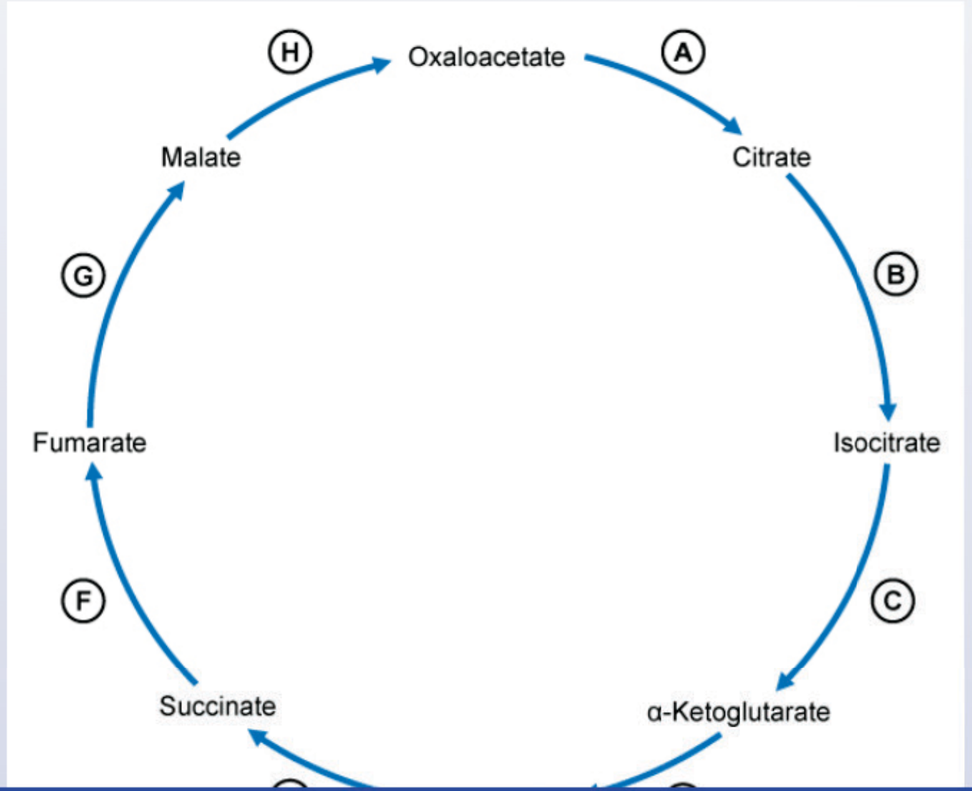
A 44-year-old man is brought to the emergency department after police officers found him agitated and confused. During transport to the hospital, he is started on intravenous fluids with dextrose. On arrival, the patient is disoriented but cooperative. Physical examination shows bruises on the forehead, forearms, and shins. Extraocular findings include bilateral horizontal nystagmus and impaired lateral eye movements; however, the ambulance personnel state that the patient's extraocular movements were normal when they arrived on the scene. The patient also has an unsteady gait with widely spaced legs and short steps. Review of the medical record shows that he has been admitted to the hospital with alcohol intoxication several times before. This patient's neurologic findings are most likely related to deficiency of a cofactor required for which of the following reactions?



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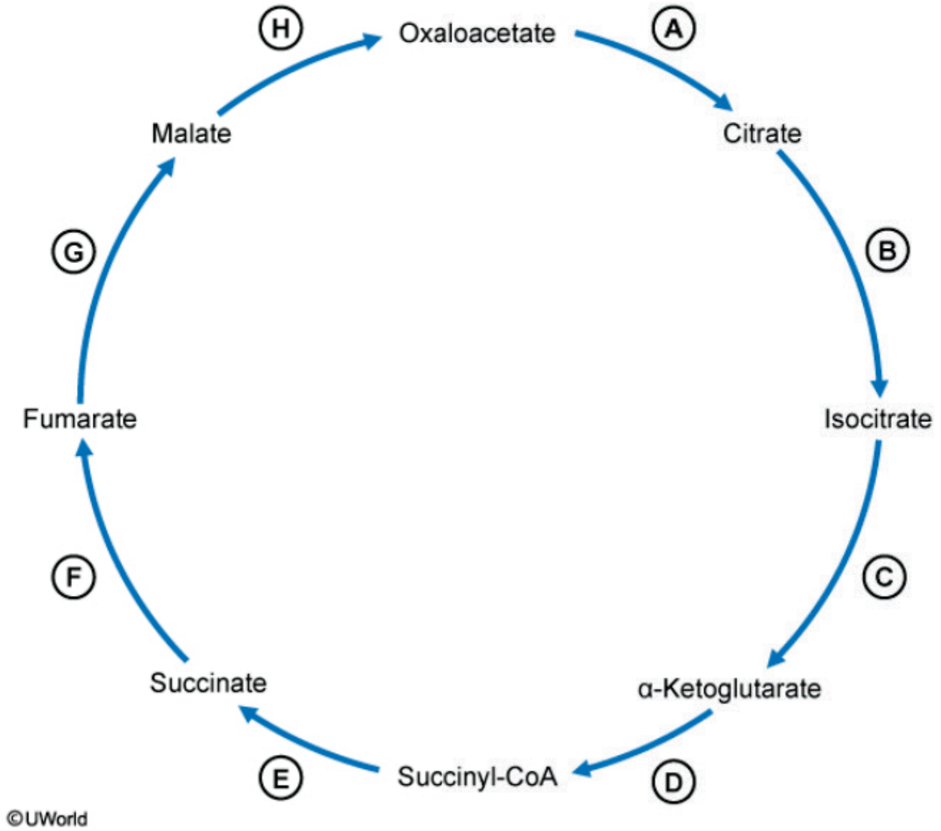

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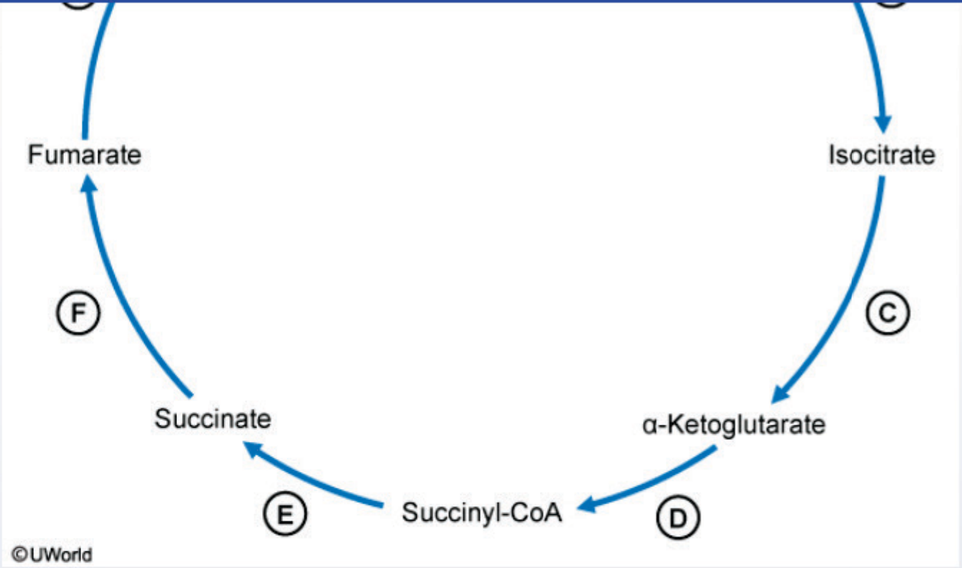

- A. A
- B. B
- C. C
- D. D
- E. E
- F. F
- G. G
- H. H

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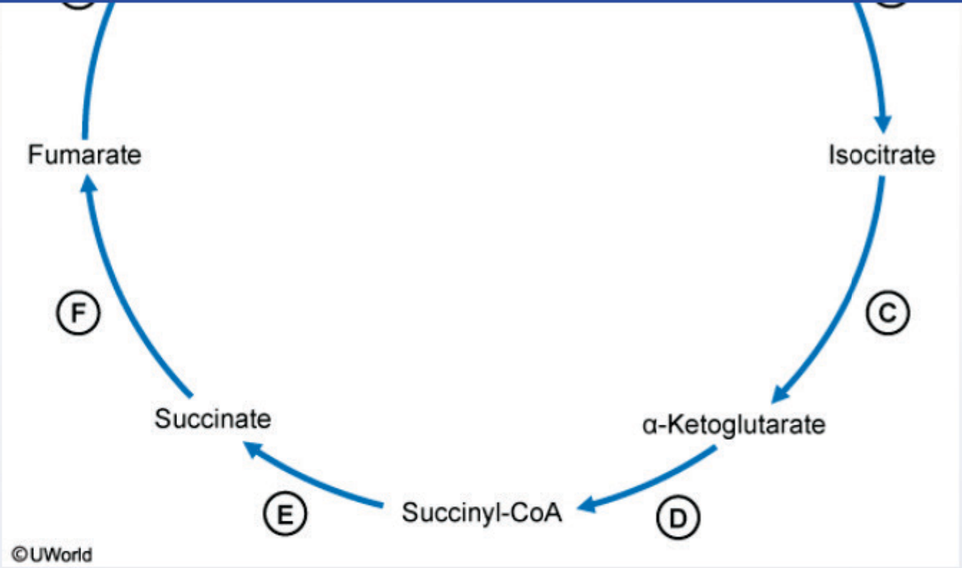

- A. A (9%)
- B. B (2%)
- ✗ C. C (15%)
- ✓ D. D (50%)
- E. E (9%)
- F. F (4%)
- G. G (1%)
- H. H (5%)

Incorrect
Correct answer
D

50%
Answered correctly

12 secs
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Correct answer

50%
Answered correctly

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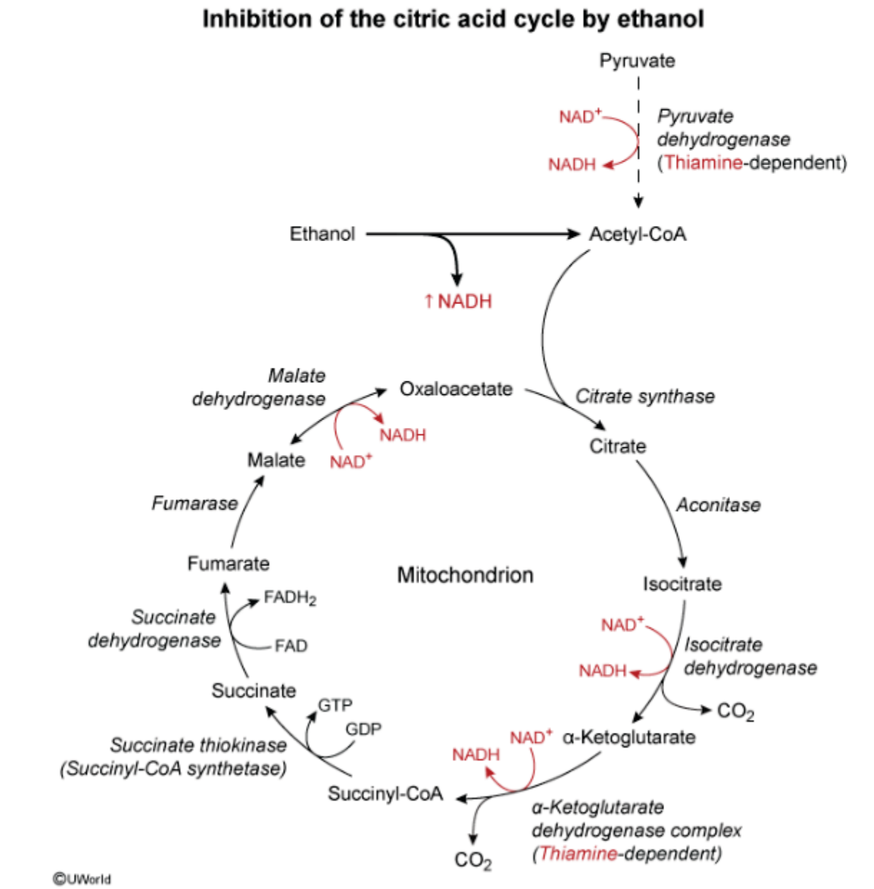

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This patient's multiple previous hospitalizations for alcohol intoxication and easy bruising are indicative of **chronic alcohol use**. Patients with this condition are frequently deficient in **thiamine**, a necessary **cofactor** for several enzymes involved in glucose metabolism, including pyruvate dehydrogenase, **alpha-ketoglutarate dehydrogenase**, and transketolase **(Choices A, B, E, F, and G)**.

The administration of glucose to thiamine-deficient patients can rapidly deplete the small amount of circulating thiamine. This can result in neuronal injury within highly metabolic brain regions, leading to the classic triad of acute **Wernicke encephalopathy** seen in this patient:

- **Encephalopathy** (eg, confusion)
- **Oculomotor dysfunction** (eg, horizontal nystagmus)
- **Ataxia** (eg, unsteady gait)

(Choices C and H) The metabolism of ethanol by alcohol dehydrogenase and aldehyde dehydrogenase consumes NAD^+ and increases the NADH/NAD^+ ratio. This skewed ratio inhibits enzymatic pathways requiring NAD^+ (eg, alpha-ketoglutarate dehydrogenase, isocitrate dehydrogenase, malate dehydrogenase), and as a result, the entire citric acid cycle is typically impaired in intoxicated patients. However, this patient has the classic findings of Wernicke encephalopathy, which is caused by thiamine (not NAD^+) depletion; the only thiamine-dependent enzyme in the citric acid cycle is alpha-ketoglutarate dehydrogenase.

Educational objective:
Several enzymes involved in glucose metabolism (eg, pyruvate dehydrogenase, alpha-ketoglutarate dehydrogenase) require thiamine as a cofactor. The administration of glucose to thiamine-deficient patients (eg, chronic alcohol use) can precipitate Wernicke encephalopathy (eg, acute confusion, ophthalmoplegia, ataxia) due to rapid thiamine consumption.

Biochemistry	Psychiatric/Behavioral & Substance Use Disorder	Thiamine deficiency
Subject	System	Topic

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A 5-year-old boy is brought to the office by his parents for a well-child visit. His mother says, "My son is doing very well. He is able to read at a first-grade level and knows his name and address. He loves to sing, dance, and play house with his older sisters. Everything seems fine with him; we just want to make sure his vaccinations are up to date before our family trip overseas." The physician administers the appropriate vaccinations. Just before leaving, the father says, "I think you should know that my son is playing with his sister's dolls and doesn't seem to like cars or trucks like most other boys. Is that normal?" Which of the following is the most appropriate response to the father's concerns?

- A. "I hear your concern; let me reassure you that many boys play with dolls as a normal part of exploring the world."
- B. "I understand your concern, but at his age it is best to allow him to play freely."
- C. "I understand your concern; it may help to have him play with male friends and spend more time with you."
- D. "It is helpful that you brought this up. Your son may have gender dysphoria and need additional support and assessment."
- E. "There is no need to worry; children don't fully develop gender identity until adolescence."

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A 5-year-old boy is brought to the office by his parents for a well-child visit. His mother says, "My son is doing very well. He is able to read at a first-grade level and knows his name and address. He loves to sing, dance, and play house with his older sisters. Everything seems fine with him; we just want to make sure his vaccinations are up to date before our family trip overseas." The physician administers the appropriate vaccinations. Just before leaving, the father says, "I think you should know that my son is playing with his sister's dolls and doesn't seem to like cars or trucks like most other boys. Is that normal?" Which of the following is the most appropriate response to the father's concerns?

✓ A. "I hear your concern; let me reassure you that many boys play with dolls as a normal part of exploring the world." (62%)

✗ B. "I understand your concern, but at his age it is best to allow him to play freely." (21%)

C. "I understand your concern; it may help to have him play with male friends and spend more time with you." (3%)

D. "It is helpful that you brought this up. Your son may have gender dysphoria and need additional support and assessment." (4%)

E. "There is no need to worry; children don't fully develop gender identity until adolescence." (7%)

Incorrect
Correct answer
A

62%
Answered correctly

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Explanation

Gender is the innate feeling someone has of being male, female, or a combination of both. Children develop an understanding of the concept of gender by age 3-4 and have a sense of the permanence of gender around age 5-

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Gender is the innate feeling someone has of being male, female, or a combination of both. Children develop an understanding of the concept of gender by age 3-4 and have a sense of the permanence of gender around age 5-6. It is **developmentally normal** for them to explore the world by **engaging in activities** that may be culturally associated with the **opposite gender**. It is important to follow a child's lead and allow this exploration to occur.

In contrast to occasional play and exploration, if there is a prolonged and intense feeling that a person's gender does not match one's assigned birth sex, it is more likely to continue into puberty. When this feeling is associated with **significant distress** it is diagnosed as **gender dysphoria**. Patients with this condition have increased rates of psychiatric illness, including depression and anxiety, and need monitoring and support.

(Choice B) Although it is important to allow the child to play freely, this response does not answer the father's question and is unlikely to decrease his concern. The father should be educated that his child's type of play is part of normal exploration.

(Choice C) It is normal for a child to explore gender activities. There is no evidence that boys need increased exposure to male figures to understand their own gender.

(Choice D) Playing with dolls is consistent with normal explorative play, not gender dysphoria. Further evaluation and professional support might be warranted in this child if he had a more persistent desire to be the opposite sex or disliked his own genitalia.

(Choice E) Children usually know their gender by age 4 and understand that it is permanent by age 5-6.

Educational objective:
Although children understand the concept of gender by age 4, it is normal for them to explore activities culturally associated with the opposite gender. In contrast, gender dysphoria is diagnosed when there is marked distress associated with a prolonged and intense feeling that one is a different gender from one's birth sex.

References

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A 29-year-old woman comes to the office due to depression. Since breaking up with her boyfriend last month, she has been extremely sad and has difficulty getting out of bed. She describes sleeping 16 hours a day, increased appetite, a 4.5-kg (10-lb) weight gain, low energy, decreased concentration, and loss of interest in socializing with her friends and family. The patient had 2 similar episodes at age 23 and 27. She also describes brief periods in the past, lasting several days, when she was uncharacteristically confident and optimistic, successfully juggled 3 part-time jobs, and felt well rested and energetic despite sleeping only 3-4 hours a night. The patient drinks a glass of wine several times a week but does not use tobacco or illicit drugs. Which of the following is the most likely diagnosis?

- A. Adjustment disorder with depressed mood
- B. Bipolar I disorder
- C. Bipolar II disorder
- D. Cyclothymic disorder
- E. Recurrent major depressive disorder

Submit

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A 29-year-old woman comes to the office due to depression. Since breaking up with her boyfriend last month, she has been extremely sad and has difficulty getting out of bed. She describes sleeping 16 hours a day, increased appetite, a 4.5-kg (10-lb) weight gain, low energy, decreased concentration, and loss of interest in socializing with her friends and family. The patient had 2 similar episodes at age 23 and 27. She also describes brief periods in the past, lasting several days, when she was uncharacteristically confident and optimistic, successfully juggled 3 part-time jobs, and felt well rested and energetic despite sleeping only 3-4 hours a night. The patient drinks a glass of wine several times a week but does not use tobacco or illicit drugs. Which of the following is the most likely diagnosis?

- A. Adjustment disorder with depressed mood (4%)
- ✗ B. Bipolar I disorder (28%)
- ✓ C. Bipolar II disorder (46%)
- D. Cyclothymic disorder (14%)
- E. Recurrent major depressive disorder (5%)

Incorrect
Correct answer
C

46%
Answered correctly

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Explanation

Bipolar & related disorders	
Manic episode	**Hypomanic episode** • Symptoms **less severe**

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Bipolar & related disorders	
Manic episode • Symptoms more **severe** • **1 week** unless hospitalized • **Marked impairment** in social or occupational functioning or **hospitalization** necessary • May have **psychotic features**; makes episode manic by definition	**Hypomanic episode** • Symptoms **less severe** • **≥4 consecutive days** • Unequivocal, observable change in functioning from baseline • Symptoms not severe enough to cause marked impairment or necessitate hospitalization • **No psychotic features**
Bipolar I • **Manic episode(s)** • Depressive episodes common but not required for diagnosis	
Bipolar II • **Hypomanic episode(s)** • ≥1 major depressive episodes	
Cyclothymic disorder • **≥2 years** of fluctuating, mild hypomanic & depressive symptoms that do not meet criteria for hypomanic or major depressive episodes	

This patient's current major depressive episode (≥2 weeks, depressed mood, low energy, hypersomnia, increased appetite, decreased concentration, loss of interest) and history suggestive of a hypomanic episode (increased activity, energy and confidence, decreased need for sleep) are consistent with a diagnosis of **bipolar II disorder**. Patients with bipolar II disorder have a **history of hypomanic (not manic) episodes** and **one or more major**

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of major depressive episodes

This patient's current major depressive episode (≥2 weeks, depressed mood, low energy, hypersomnia, increased appetite, decreased concentration, loss of interest) and history suggestive of a hypomanic episode (increased activity, energy and confidence, decreased need for sleep) are consistent with a diagnosis of **bipolar II disorder**. Patients with bipolar II disorder have a **history of hypomanic (not manic) episodes** and **one or more major depressive episodes**. Hypomania is differentiated from mania by a lesser degree of severity and functional impairment and the absence of psychosis. As in this patient, those experiencing hypomania exhibit a noticeable change in behavior but are often very productive despite requiring less sleep. In contrast to manic patients, those who are hypomanic are often able to work and are rarely hospitalized.

(Choice A) Adjustment disorders develop in response to an identifiable stressor but are not diagnosed if the patient has sufficient symptoms to meet the criteria for another disorder.

(Choice B) Bipolar I disorder is diagnosed in patients who experience manic episodes (severe symptoms causing marked impairment, possible psychotic features). Major depressive episodes are common but not required for diagnosis.

(Choice D) Patients diagnosed with cyclothymic disorder experience at least 2 years of numerous periods of hypomanic and depressive symptoms that do not meet the criteria for hypomanic or major depressive episodes.

(Choice E) This patient's history of a distinct change in behavior (elevated mood, excess energy, hyperactivity, decreased need for sleep, inflated self-esteem) is consistent with hypomania, ruling out unipolar major depressive disorder.

Educational objective:
Patients who experience major depressive and hypomanic episodes are diagnosed with bipolar II disorder. In contrast to manic episodes, hypomanic episodes are less severe, do not involve psychosis, and cause a lesser degree of functional impairment.

References

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A 32-year-old man with a history of bipolar disorder is brought to the emergency department by his wife. He has been unable to sleep for more than 3 hours a night for the past week. Over the past several weeks, the patient has been irritable at home and has argued constantly with his wife. He has racing thoughts and speaks rapidly. The patient has stopped going to his job as a plumber, having decided to stay home and "unravel the secrets of the universe." He has been drawing shapes and equations on the walls, and he has accused his wife of working for the police and trying to steal his secrets. Prior to examination, the patient becomes increasingly agitated and is hospitalized against his will. He has no other medical conditions. Vital signs, physical examination, and laboratory findings are normal. He is prescribed multiple medications to address his symptoms. Five days later, the patient is calm but has difficulty moving spontaneously or getting out of bed. He does not respond appropriately to questions and appears newly disoriented and confused. Temperature is 39.4 C (102.9 F), blood pressure is 162/98 mm Hg, pulse is 98/min, and respirations are 20/min. Dysregulation of which of the following neurotransmitters is most likely to be the primary cause of this patient's new symptoms?

- A. 5-hydroxytryptamine
- B. Dopamine
- C. Gamma-aminobutyric acid
- D. Glutamate
- E. Norepinephrine

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A 32-year-old man with a history of bipolar disorder is brought to the emergency department by his wife. He has been unable to sleep for more than 3 hours a night for the past week. Over the past several weeks, the patient has been irritable at home and has argued constantly with his wife. He has racing thoughts and speaks rapidly. The patient has stopped going to his job as a plumber, having decided to stay home and "unravel the secrets of the universe." He has been drawing shapes and equations on the walls, and he has accused his wife of working for the police and trying to steal his secrets. Prior to examination, the patient becomes increasingly agitated and is hospitalized against his will. He has no other medical conditions. Vital signs, physical examination, and laboratory findings are normal. He is prescribed multiple medications to address his symptoms. Five days later, the patient is calm but has difficulty moving spontaneously or getting out of bed. He does not respond appropriately to questions and appears newly disoriented and confused. Temperature is 39.4 C (102.9 F), blood pressure is 162/98 mm Hg, pulse is 98/min, and respirations are 20/min. Dysregulation of which of the following neurotransmitters is most likely to be the primary cause of this patient's new symptoms?

- A. 5-hydroxytryptamine (16%)
- ✓ B. Dopamine (63%)
- C. Gamma-aminobutyric acid (9%)
- D. Glutamate (4%)
- E. Norepinephrine (5%)

Correct

63% Answered correctly

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Explanation

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Neuroleptic malignant syndrome	
Causes	• Antipsychotic medication (eg, haloperidol) • Antiemetic medications (eg, promethazine) • Withdrawal of Parkinson medications
Pathophysiology	• Central dopaminergic receptor blockade (ie, hyperthermia, dysautonomia) • Disruption of nigrostriatal dopamine pathways (ie, rigidity)
Signs/Symptoms	• Fever • Altered mental status • Generalized muscle rigidity (ie, lead pipe rigidity) • Autonomic instability (eg, abnormal vital signs, diaphoresis)

This patient initially had multiple symptoms of an **acute manic episode** (increased activity, decreased need for sleep, racing thoughts, pressured speech, grandiose and paranoid delusions) and likely received **antipsychotic medication** to target his agitation and psychosis. His **subsequent** development of fever, confusion, abnormal vital signs, and difficulty moving 5 days later is consistent with **neuroleptic malignant syndrome** (NMS), an uncommon but life-threatening complication of dopamine antagonists.

NMS is characterized by **hyperthermia**, severe **muscular rigidity**, **altered mental status**, and **autonomic dysfunction** (eg, labile blood pressure, tachycardia, diaphoresis). It most commonly occurs within the first 2 weeks of initiation of therapy but can occur anytime during treatment. NMS is thought to be primarily due to **dysregulation of dopamine**. D2 antagonism is the mechanism of action of all first-generation and most second-generation antipsychotics. Central dopamine receptor blockade in the hypothalamus is believed to be responsible for autonomic dysregulation and hyperthermia. Dopamine antagonism in the nigrostriatal pathway may lead to the diffuse "lead-pipe" rigidity.

(Choices A and E) 5-hydroxytryptamine (serotonin) and norepinephrine reuptake inhibition is the mechanism of

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NMS is characterized by **hyperthermia**, severe **muscular rigidity**, **altered mental status**, and **autonomic dysfunction** (eg, labile blood pressure, tachycardia, diaphoresis). It most commonly occurs within the first 2 weeks of initiation of therapy but can occur anytime during treatment. NMS is thought to be primarily due to **dysregulation of dopamine**. D2 antagonism is the mechanism of action of all first-generation and most second-generation antipsychotics. Central dopamine receptor blockade in the hypothalamus is believed to be responsible for autonomic dysregulation and hyperthermia. Dopamine antagonism in the nigrostriatal pathway may lead to the diffuse "lead-pipe" rigidity.

(Choices A and E) 5-hydroxytryptamine (serotonin) and norepinephrine reuptake inhibition is the mechanism of action of many antidepressants (eg, selective serotonin reuptake inhibitors, serotonin-norepinephrine reuptake inhibitors). However, antidepressants are not used in the treatment of acute mania. Serotonergic drugs can cause serotonin syndrome (SS), but not NMS. SS has overlapping features with NMS (eg, autonomic dysregulation, mental status changes) but is characterized by neuromuscular irritability and hyperreflexia (eg, clonus) rather than generalized muscle rigidity.

(Choice C) Medications that enhance the inhibitory effects of gamma-aminobutyric acid (eg, benzodiazepines) are often used as adjunctive treatment in acute mania to target agitation and insomnia. However, benzodiazepines do not cause NMS.

(Choice D) Glutamate (which is the major excitatory neurotransmitter in the brain) may be affected by some antipsychotic medications and mood stabilizers, but it is not known to have a primary role in the development of NMS.

Educational objective:
Neuroleptic malignant syndrome (NMS) is characterized by severe muscular rigidity, mental status changes, autonomic dysregulation, and hyperthermia. Dopamine antagonism, the mechanism of action of most antipsychotics, has been implicated as a primary cause of NMS.

References

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A 19-year-old man is brought to the office by his mother due to uncharacteristic behaviors. A year ago, the patient's father died unexpectedly in a motor vehicle collision. Afterward, the patient became increasingly withdrawn and stopped responding to his friends' text messages. He became disinterested in completing homework assignments and did not graduate from high school due to failing grades. For the past few months, the patient has spent most of the time alone in his room, listening to music and drawing. His mother says, "All of his drawings are of numbers in different colors and sizes. He's been fixated on the date and time that his dad died and thinks that they have special meanings." The patient is difficult to follow in conversation, changing topics frequently and making random remarks. On mental status examination, he pauses before answering questions and provides brief, unrelated responses. The patient does not make eye contact, and his affect is blunted. He has no suicidal ideation or hallucinations. Which of the following is the most likely diagnosis?

- A. Delusional disorder
- B. Normal bereavement
- C. Obsessive-compulsive disorder
- D. Posttraumatic stress disorder
- E. Schizophrenia

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A 19-year-old man is brought to the office by his mother due to uncharacteristic behaviors. A year ago, the patient's father died unexpectedly in a motor vehicle collision. Afterward, the patient became increasingly withdrawn and stopped responding to his friends' text messages. He became disinterested in completing homework assignments and did not graduate from high school due to failing grades. For the past few months, the patient has spent most of the time alone in his room, listening to music and drawing. His mother says, "All of his drawings are of numbers in different colors and sizes. He's been fixated on the date and time that his dad died and thinks that they have special meanings." The patient is difficult to follow in conversation, changing topics frequently and making random remarks. On mental status examination, he pauses before answering questions and provides brief, unrelated responses. The patient does not make eye contact, and his affect is blunted. He has no suicidal ideation or hallucinations. Which of the following is the most likely diagnosis?

- A. Delusional disorder (17%)
- ✗ B. Normal bereavement (7%)
- C. Obsessive-compulsive disorder (4%)
- D. Posttraumatic stress disorder (21%)
- ✓ E. Schizophrenia (49%)

Incorrect
Correct answer
E

49%
Answered correctly

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Explanation

Schizophrenia symptoms

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Schizophrenia symptoms	
Positive ("pathologic excesses")	**Negative** ("pathologic deficits")
• Hallucinations: false sensory perception in the absence of stimuli (eg, hearing voices) • Delusions: false belief despite evidence to the contrary (eg, "the neighbors are aliens") • Disorganized/incoherent speech • Disorganized/agitated behavior	• Apathy: lack of motivation • Social withdrawal • Flat affect: emotional flattening/monotone speech • Poverty (lack) of speech • Anhedonia: inability to experience pleasure

Schizophrenia presents with a variety of cognitive, behavioral, and emotional disturbances and typically has an onset in early adulthood (peak age: men, early 20s; women, late 20s). Schizophrenia has a gradual onset but occasionally a **precipitating stressor** unmasks the disorder, such as in this patient with symptoms after the death of his father.

The diagnosis is made with continuous signs of disturbance for at least 6 months, including at least 1 month of ≥2 of the following active symptoms (with at least 1 from the first 3):

- Delusions (eg, fixation on a date and time, thinking that it has special meaning)
- Hallucinations
- Disorganized speech (eg, frequent change of topics, random remarks)
- Disorganized/catatonic behavior (eg, bizarre drawings)
- Negative symptoms (eg, apathy, flat affect, social withdrawal, lack of speech, anhedonia)

Although **positive symptoms** (eg, delusions, hallucinations) are characteristic in schizophrenia, some patients, such as this one, demonstrate largely **negative symptoms** with increasing social withdrawal (eg, not responding

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• Disorganized/incoherent speech • Disorganized/agitated behavior	• Anhedonia: inability to experience pleasure

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- Disorganized/catatonic behavior (eg, bizarre drawings)
- Negative symptoms (eg, apathy, flat affect, social withdrawal, lack of speech, anhedonia)

Although **positive symptoms** (eg, delusions, hallucinations) are characteristic in schizophrenia, some patients, such as this one, demonstrate largely **negative symptoms** with increasing social withdrawal (eg, not responding to friends), apathy (eg, not completing homework assignments), and affective blunting. Treatment is with antipsychotics (eg, risperidone, olanzapine). However, these drugs are more effective at managing positive symptoms; negative symptoms are typically refractory to intervention.

(Choice A) Fixation on date and time as having special meaning is a referential delusion (ie, a belief that cues from the environment are individualized messages). Patients with delusional disorders typically do not have referential delusions, negative symptoms, or disorganized speech.

(Choice B) Response to a significant loss may include withdrawal, apathy, flat affect or preoccupation with memories of the deceased. However, normal bereavement does not cause disorganized speech, disorganized behavior, or delusions.

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- Disorganized/catatonic behavior (eg, bizarre drawings)
- Negative symptoms (eg, apathy, flat affect, social withdrawal, lack of speech, anhedonia)

Although **positive symptoms** (eg, delusions, hallucinations) are characteristic in schizophrenia, some patients, such as this one, demonstrate largely **negative symptoms** with increasing social withdrawal (eg, not responding to friends), apathy (eg, not completing homework assignments), and affective blunting. Treatment is with antipsychotics (eg, risperidone, olanzapine). However, these drugs are more effective at managing positive symptoms; negative symptoms are typically refractory to intervention.

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(Choice B) Response to a significant loss may include withdrawal, apathy, flat affect or preoccupation with memories of the deceased. However, normal bereavement does not cause disorganized speech, disorganized behavior, or delusions.

(Choice C) Behaviors related to obsessive-compulsive disorder (OCD), such as ritualistic washing or chewing food a certain number of times, can appear bizarre. However, bizarre, indecipherable speech; negative symptoms; and referential delusions are not associated with OCD.

(Choice D) Posttraumatic stress disorder (PTSD) involves psychological distress following a traumatic event. It can present with distress-related disturbances resembling hallucinations and/or mood alterations with anhedonia and negative emotionality. However, the levels of disorganized, incoherent speech and thought in this patient are not seen in PTSD.

Educational objective:
Schizophrenia is diagnosed in patients with signs of disturbance for ≥6 months, including at least 1 month of ≥2 of the following active symptoms (with at least 1 from the first 3): delusions, hallucinations, disorganized speech, disorganized/catatonic behavior, and negative symptoms.

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A 34-year-old man comes to the office for evaluation of opioid use disorder. He was prescribed oxycodone for a sports-related injury in his mid-20s, developed dependency, and began using intravenous heroin in its place. In the past few years, the patient has had multiple overdoses requiring naloxone administration. He recently tried quitting heroin on his own but experienced recurrent relapses. He has now been abstinent for 2 days but reports significant cravings. After a discussion of various treatment options, the patient is prescribed buprenorphine. The dose-response curve of this medication is shown in the image below:

Which of the following clinical pharmacologic effects of buprenorphine is most likely?

- A. Buprenorphine can fully reverse the effect of heroin overdose
- B. Buprenorphine can precipitate or treat opioid withdrawal from heroin
- C. Buprenorphine carries a higher risk of hypoventilation compared to heroin
- D. Buprenorphine overdose is more easily reversed with naloxone compared to heroin

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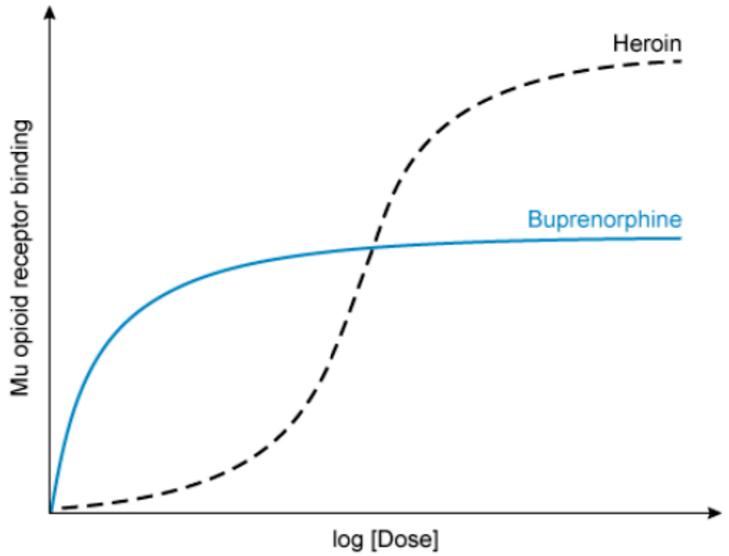

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D. Buprenorphine overdose is more easily reversed with naloxone compared to heroin

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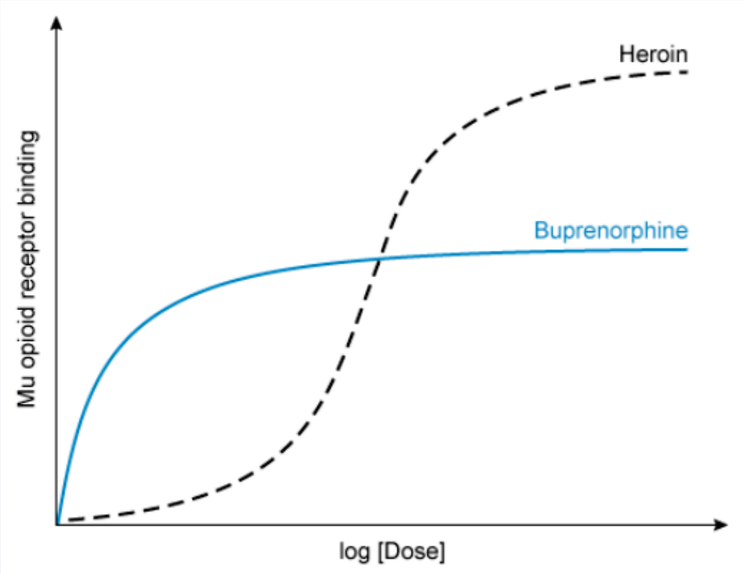

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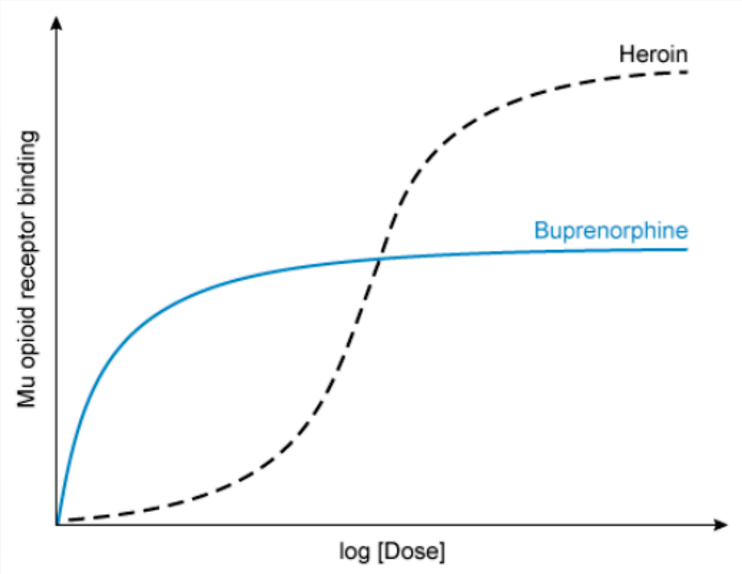

Which of the following clinical pharmacologic effects of buprenorphine is most likely?

- A. Buprenorphine can fully reverse the effect of heroin overdose (3%)
- ✓ B. Buprenorphine can precipitate or treat opioid withdrawal from heroin (75%)
- C. Buprenorphine carries a higher risk of hypoventilation compared to heroin (1%)
- D. Buprenorphine overdose is more easily reversed with naloxone compared to heroin (19%)

Correct

75% Answered correctly

10 secs Time Spent

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Correct

75%
Answered correctly

10 secs
Time Spent

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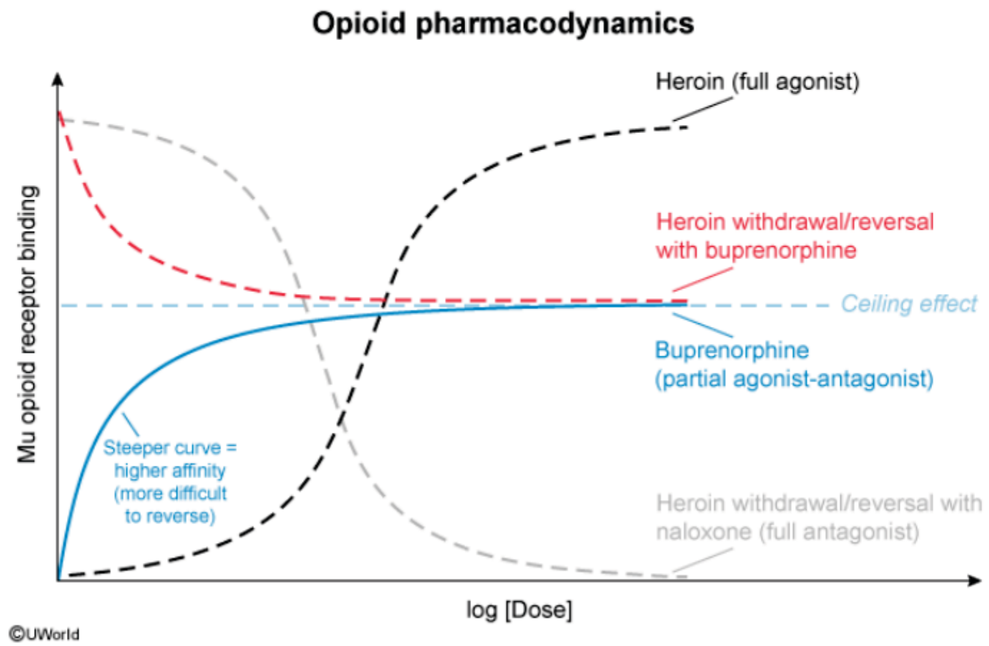

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plateau (ceiling) in the dose-response curve. This ceiling caps its analgesic potency but reduces unwanted

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This patient has developed opioid use disorder with dependency. Some patients benefit from opioid replacement therapy, either indefinitely or as a bridge to gradual cessation. **Buprenorphine** is a semisynthetic opioid used to replace and treat dependency on unregulated opioids (eg, heroin) due to its favorable pharmacokinetics.

As a **partial agonist** at the mu opioid receptor (ie, mixed agonist and antagonist activity), buprenorphine has a **ceiling effect**. At higher doses, the agonist activity is equally opposed by the antagonist activity, leading to a plateau (ceiling) in the dose-response curve. This ceiling caps its analgesic potency but reduces unwanted adverse effects such as respiratory depression. Therefore, high doses of buprenorphine carry a **lower risk of respiratory depression** compared to full agonists such as heroin **(Choice C)**.

A key drawback of partial agonists (eg, buprenorphine) is the potential to **displace full agonists** from the receptor: partial agonists act as relative antagonists in the presence of full agonists. Therefore, buprenorphine can **precipitate acute withdrawal** if administered when receptors are still occupied by full agonists (eg, heroin). For this reason, patients must discontinue opioids and partially enter the withdrawal state (eg, wait 48 hours) prior to the initiation of buprenorphine.

(Choice A) Complete reversal of a full agonist (eg, heroin) requires a full antagonist (eg, naloxone). Because buprenorphine is a partial agonist-antagonist, the degree of reversal is limited by the ceiling effect.

(Choice D) The ability of antagonists to displace bound drugs is determined by the affinity of the drug-receptor interaction. Drugs that bind tightly have a steep binding curve; in other words, a lower concentration of drug is required to achieve the same effect. Buprenorphine has a higher affinity to the mu receptor than heroin, which is apparent from its steeper binding curve. Overdose with buprenorphine often requires repeated, high doses of naloxone due to this higher affinity.

Educational objective:
Buprenorphine is a semisynthetic opioid with mixed/partial agonist-antagonist activity, resulting in a therapeutic ceiling. Relative to full opioid agonists, this reduces the risk of dose-dependent adverse effects such as respiratory depression.

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A 63-year-old woman with a history of metastatic breast cancer comes to the office due to depressed mood. Over the past month, the patient has become increasingly sad and frequently cries when thinking about her poor prognosis and dying. She has lost 4.5 kg (10 lb) over the past month. Her energy level is low, and she has difficulty falling asleep and frequent nighttime awakenings. The patient has become very withdrawn, doesn't answer the phone, and no longer looks forward to family visits. She feels bad about not wanting to be around her grandchildren. On mental status examination, the patient is alert and oriented with depressed mood and affect. She has no suicidal ideation. Which of the following symptoms is most indicative of major depressive disorder in this patient?

- A. Loss of interest in family
- B. Low energy
- C. Sleep disturbance
- D. Thoughts of dying
- E. Weight loss

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- ✓ A. Loss of interest in family (71%)
- ✗ B. Low energy (4%)
- C. Sleep disturbance (8%)
- D. Thoughts of dying (12%)
- E. Weight loss (2%)

Incorrect
Correct answer
A

71%
Answered correctly

05 secs
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Explanation

Major depressive disorder	
	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure):

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Major depressive disorder	
Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure): ◦ Depressed mood ◦ Loss of interest or pleasure ◦ Change in appetite or weight ◦ Insomnia or hypersomnia ◦ Psychomotor retardation or agitation ◦ Low energy ◦ Poor concentration or indecisiveness ◦ Thoughts of worthlessness or inappropriate guilt ◦ Recurrent thoughts of death or suicide • No history of mania or hypomania • Not due to substances or another medical condition

Diagnosis of major depressive disorder in **patients with cancer** is challenging as **somatic symptoms of depression overlap** with those of cancer and/or the adverse effects of cancer treatments. This patient's weight loss, low energy, and sleep disturbance may also be due to metastatic cancer and/or chemotherapy. Therefore, these somatic symptoms are less reliable indicators of major depression **(Choices B, C, and E)**.

Nonsomatic depressive symptoms (eg, feelings of worthlessness, excessive guilt, and suicidal ideation) are more reliable for diagnosing depression in patients with advanced medical illness. This patient's withdrawal and inability to enjoy family visits (ie, **loss of interest and anhedonia**) are therefore the most concerning symptoms for major depression.

(Choice D) Thinking about death and dying is normal in patients with advanced cancer and a poor prognosis. If

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	◦ Thoughts of worthlessness or inappropriate guilt ◦ Recurrent thoughts of death or suicide • No history of mania or hypomania • Not due to substances or another medical condition

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(Choice D) Thinking about death and dying is normal in patients with advanced cancer and a poor prognosis. If the patient's thoughts of death included suicidal ideation, intent, or plan, this would be indicative of major depression.

Educational objective:
Somatic symptoms of depression (weight loss, low energy, sleep disturbance) are less reliable indicators of major depressive disorder in patients with advanced medical illness. Focusing on nonsomatic symptoms, such as loss of interest, anhedonia, worthlessness, excessive guilt, and suicidality, can assist in diagnosing comorbid depression in these patients.

References

- Screening, assessment, and care of anxiety and depressive symptoms in adults with cancer: an American Society of Clinical Oncology guideline adaptation.
- Distinguishing depressive symptoms from similar cancer-related somatic symptoms: implications for

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A 34-year-old man is brought to the emergency department due to a severe headache and blurry vision. His symptoms began suddenly after having lunch at a new Italian deli in his neighborhood. The patient says he "ate a sandwich with lots of fancy meats and cheeses" and drank an iced tea. His medical history is significant for treatment-resistant major depressive disorder. He has no known medication or food allergies. Blood pressure is 210/130 mm Hg and heart rate is 110/min. On physical examination, he appears tremulous and diaphoretic. The medication used to treat this patient's depression most likely affects which of the following steps of monoamine neurotransmission?

- A. Binding to postsynaptic monoamine receptors
- B. Monoamine breakdown
- C. Presynaptic nonselective monoamine uptake
- D. Presynaptic selective dopamine uptake
- E. Presynaptic selective norepinephrine uptake
- F. Presynaptic selective serotonin uptake

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- A. Binding to postsynaptic monoamine receptors (4%)
- ✓ B. Monoamine breakdown (73%)
- C. Presynaptic nonselective monoamine uptake (10%)
- D. Presynaptic selective dopamine uptake (1%)
- E. Presynaptic selective norepinephrine uptake (3%)
- F. Presynaptic selective serotonin uptake (6%)

Correct

73%
Answered correctly

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Time Spent

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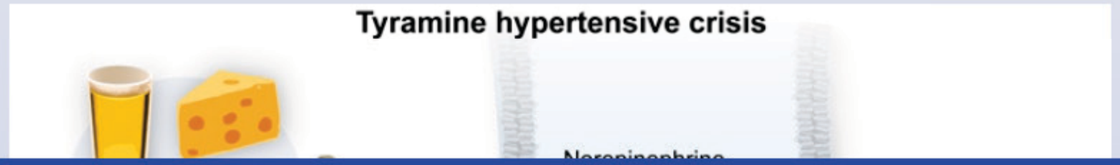
Explanation



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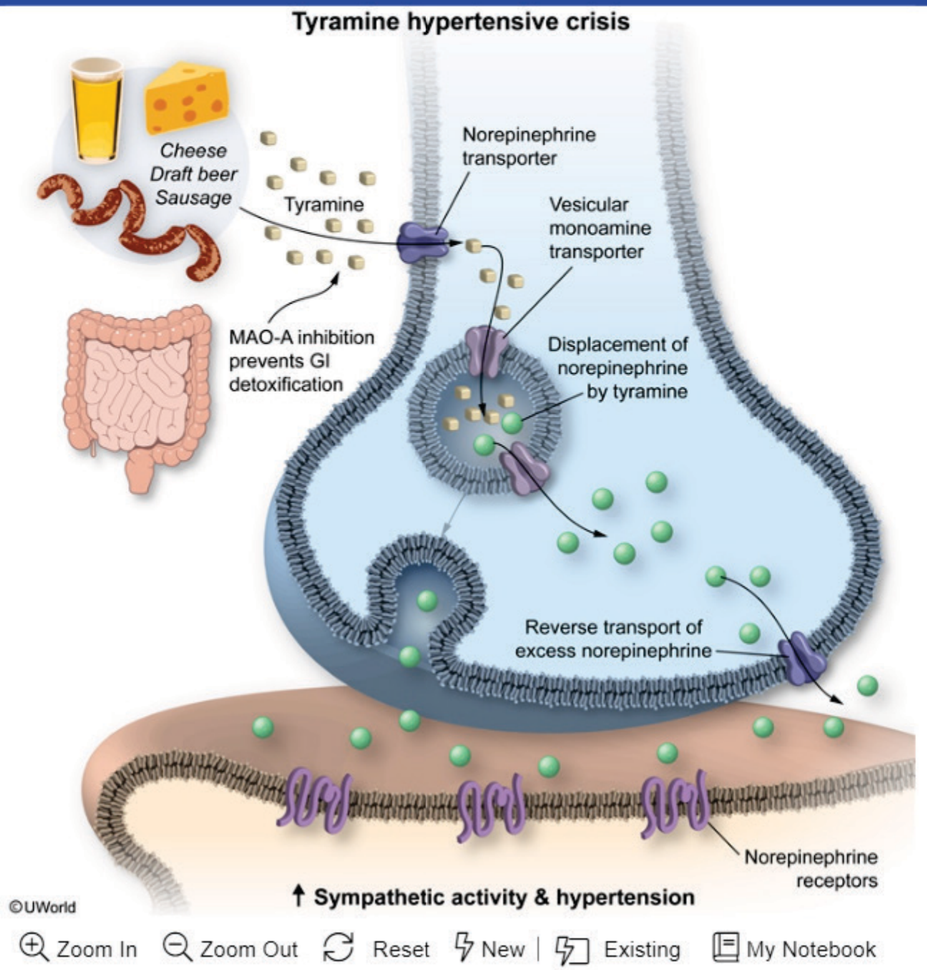

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This patient is experiencing a **hypertensive emergency** (eg, severe hypertension, headache, blurry vision) and

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This patient is experiencing a **hypertensive emergency** (eg, severe hypertension, headache, blurry vision) and has signs of excessive sympathetic activity (eg, tachycardia, diaphoresis, tremors), most likely due to a food-drug interaction between **tyramine-containing foods** (eg, aged cheeses, cured meats, draft beer) and a **monoamine oxidase (MAO) inhibitor**.

MAO inhibitors increase the availability of all 3 major monoamines (eg, dopamine, norepinephrine, serotonin) by inhibiting MAO, a mitochondrial enzyme that normally breaks down monoamines. Tyramine is an indirect sympathomimetic found in certain foods (eg, aged cheeses, cured meats, draft beer) that is usually broken down in the gastrointestinal tract by MAO. In MAO inhibitor–treated patients, tyramine escapes degradation and enters the systemic circulation, leading to a hypertensive crisis.

Due to the risks of tyramine-induced hypertensive crisis and serotonin syndrome, MAO inhibitors are typically reserved for treatment-resistant depression.

(Choice A) MAO inhibitors do not affect the binding of monoamines to their receptors. Examples of commonly used monoamine receptor blockers include dopamine receptor antagonists (eg, antipsychotics) and adrenergic receptor antagonists (eg, mirtazapine).

(Choice C) MAO inhibitors do not affect presynaptic monoamine uptake.

(Choices D, E, and F) Other classes of antidepressant medications that work by blocking presynaptic uptake are selective for 1 or 2 neurotransmitters. Selective serotonin reuptake inhibitors block presynaptic serotonin reuptake and are used first-line for depression and many anxiety disorders. Atomoxetine is a norepinephrine reuptake inhibitor used in attention-deficit hyperactivity disorder. Dual reuptake inhibitors include tricyclic antidepressants, which inhibit serotonin and norepinephrine reuptake, and bupropion, a norepinephrine-dopamine reuptake inhibitor used to treat depression and tobacco dependence.

Educational objective:
Monoamine oxidase (MAO) is a mitochondrial enzyme that breaks down monoamine neurotransmitters (eg, dopamine, norepinephrine, serotonin). Tyramine-induced hypertensive crisis can occur in patients taking MAO

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Educational objective:
Monoamine oxidase (MAO) is a mitochondrial enzyme that breaks down monoamine neurotransmitters (eg, dopamine, norepinephrine, serotonin). Tyramine-induced hypertensive crisis can occur in patients taking MAO inhibitors who consume foods containing high amounts of tyramine (eg, aged cheeses, cured meats, draft beer).

References

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A 44-year-old man hospitalized for acute cholecystitis is being evaluated for anxiety and agitation. He underwent an open cholecystectomy without having any operative complications. Two days after admission, the patient experiences anxiety and tremulousness, and he becomes irritable, severely agitated, and verbally abusive to the nursing staff. He has no other medical problems. The patient does not use tobacco or illicit drugs but admits to drinking 6-8 beers daily for the last several years. He has no known drug allergies, and family history is insignificant. Blood pressure is 160/90 mm Hg and pulse is 110/min. Examination shows hand tremors bilaterally. Which of the following is the most appropriate pharmacotherapy for this patient?

- A. Baclofen
- B. Carbamazepine
- C. Chlorpromazine
- D. Haloperidol
- E. Chlordiazepoxide
- F. Phenobarbital
- G. Propranolol

Submit

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- A. Baclofen (3%)
- ✗ B. Carbamazepine (7%)
- C. Chlorpromazine (5%)
- D. Haloperidol (10%)
- ✓ E. Chlordiazepoxide (50%)
- F. Phenobarbital (12%)
- G. Propranolol (10%)

Incorrect
Correct answer
E

50%
Answered correctly

04 secs
Time Spent

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Explanation

This patient's acute onset of tremulousness, agitation, and elevated pulse and blood pressure within 48 hours of admission is suggestive of **alcohol withdrawal**. Alcohol is a CNS depressant that binds to the $GABA_A$ receptor

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This patient's acute onset of tremulousness, agitation, and elevated pulse and blood pressure within 48 hours of admission is suggestive of **alcohol withdrawal**. Alcohol is a CNS depressant that binds to the $GABA_A$ receptor complex, enhancing the inhibitory action of GABA (the major inhibitory neurotransmitter in the brain). Abrupt cessation of alcohol decreases inhibitory tone and results in CNS excitation. Alcohol withdrawal symptoms typically start within 8-12 hours after the last drink and include **insomnia, tremulousness, anxiety**, and **autonomic hyperactivity** (variable blood pressure, diaphoresis, and tachycardia). Alcohol withdrawal seizures can occur within 12-48 hours, and delirium tremens (disorientation, severe agitation, fever) typically begins within 48-96 hours.

Alcohol, barbiturates, and benzodiazepines have similar effects on GABA receptors and act by enhancing GABA inhibitory action. **Benzodiazepines** (eg, lorazepam, diazepam, chlordiazepoxide) are used as **first-line therapy** for psychomotor agitation associated with alcohol withdrawal and to prevent progression to seizures and delirium. Longer-acting benzodiazepines and those with active metabolites are preferred in the majority of patients due to self-tapering effects, resulting in a smoother course of withdrawal.

(Choice A) Baclofen is an agonist of GABA B receptors and is used to treat spastic conditions. It is less effective than benzodiazepines for treating alcohol withdrawal.

(Choice B) Carbamazepine may have a role in outpatient management of mild alcohol withdrawal, but there is insufficient evidence for its use in moderate to severe alcohol withdrawal.

(Choices C and D) Chlorpromazine and haloperidol are antipsychotic medications that lower the seizure threshold. They should not be used to treat alcohol withdrawal as these patients are already at significant risk for seizure.

(Choice F) Phenobarbital is a barbiturate anticonvulsant that enhances GABA activity. It is no longer used as first-line treatment for alcohol withdrawal because it has a worse safety profile than benzodiazepines.

(Choice G) The beta blocker propranolol can treat tremor, tachycardia, and hypertension, but it has not been shown to prevent development of seizures or delirium tremens. Treatment with benzodiazepines is the most

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(Choice G) The beta blocker propranolol can treat tremor, tachycardia, and hypertension, but it has not been shown to prevent development of seizures or delirium tremens. Treatment with benzodiazepines is the most crucial step in the management of alcohol withdrawal.

Educational objective:
Alcohol withdrawal should be considered in hospitalized patients who develop tremulousness, agitation, and elevated pulse and blood pressure within 48 hours following admission. Benzodiazepines act as a substitute for the effects of alcohol on GABA receptors, preventing alcohol withdrawal from occuring.

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A 2-year-old boy is brought to the clinic by his mother, who is concerned about his language development. She says, "I know that children speak at different ages and he is still young, but I am concerned that his speech isn't progressing and that he needs to interact with other children more. His day care teacher says that he is shy and sits in a corner playing with his favorite truck. We have also been busy with a recent move and have not given him as much attention, which doesn't help." The patient's birth history, medical history, and audiology screening are unremarkable. His mother is 6 months pregnant with her second child, and the family moved to a new home 3 months ago. In the examination room, the patient sits in a corner, avoiding eye contact with the doctor and repeatedly spinning the wheels of a toy truck. He does not respond to his name. He makes occasional grunting sounds but says no fully formed words. When his mother tries to take his truck away, he begins screaming and pulls it back. Which of the following is the most likely diagnosis in this patient?

- A. Adjustment disorder
- B. Autism spectrum disorder
- C. Language disorder
- D. Normal variation in development
- E. Selective mutism
- F. Social anxiety disorder
- G. Social (pragmatic) communication disorder

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- A. Adjustment disorder (8%)
- ✓ B. Autism spectrum disorder (80%)
- ✗ C. Language disorder (2%)
- D. Normal variation in development (3%)
- E. Selective mutism (3%)
- F. Social anxiety disorder (0%)
- G. Social (pragmatic) communication disorder (1%)

Incorrect
Correct answer
B

80%
Answered correctly

04 secs
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Explanation

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Autism spectrum disorder	
Clinical features	• Deficits in social communication & interactions with onset in early childhood ◦ Impaired social engagement (eg, back-and-forth conversation) ◦ Impaired nonverbal communication (eg, eye contact/gesturing) ◦ Difficulty developing/understanding relationships (eg, interest in peers) • Restricted, repetitive patterns of behavior ◦ Repetitive movements or speech ◦ Insistence on sameness/routines ◦ Intense fixated interests ◦ Adverse responses to sensory input (eg, textures) • May occur with or without language & intellectual impairment
Assessment & management principles	• Early diagnosis & intervention • Comprehensive, multimodal treatment (eg, speech & behavioral therapy, educational services) • Adjunctive pharmacotherapy for psychiatric comorbidities

This child's **lack of social engagement**, speech delay, and **repetitive play** are consistent with **autism spectrum disorder** (ASD). ASD is more common in boys.

Deficits often become apparent by the **second year of life**, with the diagnosis typically made before age 5. In higher-functioning cases, ASD may be diagnosed later, when social expectations increase and deficits become more noticeable.

ASD can occur with varying degrees of **language and intellectual impairment**. Language deficits can range from odd, stilted speech to delayed or complete lack of intelligible speech. Other features of ASD include impaired joint

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ASD can occur with varying degrees of **language and intellectual impairment**. Language deficits can range from odd, stilted speech to delayed or complete lack of intelligible speech. Other features of ASD include impaired joint attention (eg, lack of pointing or bringing objects to others), **motor stereotypies** (eg, hand flapping, spinning), and hyperreactivity or hyporeactivity to sensory input (eg, extreme responses to sounds or textures, indifference to pain).

(Choice A) Adjustment disorders are diagnosed when symptoms develop within 3 months of an identifiable stressor. Although the mother's pregnancy and family's move to a new home may be stressful for the boy, it would not explain his lack of language acquisition, poor social interaction, and repetitive play.

(Choice C) Language impairment frequently accompanies ASD. However, an isolated language disorder would not explain this child's lack of social interaction and restricted interests.

(Choice D) At age 2, children should be saying 2- or 3-word phrases, engaging in parallel play using a variety of toys, making eye contact, and responding to their names.

(Choice E) Selective mutism involves a failure to speak in specific situations (eg, school) despite speaking in other settings. This boy's language impairment in all settings, deficits in social reciprocity, and restricted and repetitive behaviors are characteristic of ASD.

(Choice F) In social anxiety disorder, children may have difficulty engaging with others due to anxiety in new social circumstances but otherwise have normal communication skills. This child's deficits are evident in multiple domains (home, school, office).

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(Choice F) In social anxiety disorder, children may have difficulty engaging with others due to anxiety in new social circumstances but otherwise have normal communication skills. This child's deficits are evident in multiple domains (home, school, office).

(Choice G) Social (pragmatic) communication disorder is characterized by deficits in verbal and nonverbal communication for the purposes of social interaction. If these deficits are accompanied by restricted patterns of behavior, such as in this child, the appropriate diagnosis is ASD.

Educational objective:
Autism spectrum disorder is characterized by impaired social communication/interactions and restricted, repetitive interests or behaviors. It can occur with or without language and intellectual impairment.

References

- Autism spectrum disorders.
- Social (pragmatic) communication disorders and autism spectrum disorder

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A 42-year-old woman with a history of schizophrenia is brought to the clinic by her parents after attempting to drink rubbing alcohol in response to voices telling her to kill herself. The patient believes that a television newscaster is sending her secret messages and that the devil injects her with poison at night while she is sleeping. She first developed symptoms at age 23 and has had 7 previous psychiatric hospitalizations and 2 suicide attempts. Trials of haloperidol, risperidone, and olanzapine have yielded minimal improvement. Her medical conditions include hypertension and mild obesity. Physical examination is normal. Medication therapy with clozapine is initiated. Which of the following should be regularly monitored in this patient?

- A. Absolute neutrophil count
- B. Clozapine blood level
- C. Creatinine level
- D. ECG
- E. Liver function
- F. Platelet count
- G. Prolactin level
- H. Thyroid function

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- ✓ A. Absolute neutrophil count (83%)
- ✗ B. Clozapine blood level (1%)
- C. Creatinine level (1%)
- D. ECG (2%)
- E. Liver function (4%)
- F. Platelet count (4%)
- G. Prolactin level (1%)
- H. Thyroid function (1%)

Incorrect
Correct answer
A

83%
Answered correctly

03 secs
Time Spent

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Explanation

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Clozapine treatment guidelines	
Indications	• Treatment-resistant schizophrenia • Schizophrenia associated with suicidality
Adverse effects	• Agranulocytosis • Seizures • Myocarditis • Metabolic syndrome

The second-generation antipsychotic **clozapine** is the only antipsychotic that has consistently shown superior efficacy in **treatment-resistant schizophrenia** and schizophrenia associated with persistent suicidality. Clozapine has affinity for multiple dopamine and serotonin receptors, but the precise pharmacological mechanism responsible for its superior efficacy is unknown. Clozapine binds loosely and transiently to dopamine D2 receptors, causing significantly fewer extrapyramidal symptoms compared to first-generation antipsychotics.

Neutropenia (<1000 cells/mm^3) and the potential for life-threatening **agranulocytosis** are the major adverse effects of clozapine. The risk of agranulocytosis is approximately 1%; therefore, treatment requires **regular monitoring** of the patient's **absolute neutrophil count**. Treatment should be stopped if neutropenia occurs. Seizures and myocarditis are other important adverse effects that require provider vigilance.

(Choice B) Clozapine plasma levels can be checked after an initial target dose is reached, but further dosage adjustments are usually based on clinical response. Clozapine levels are not regularly monitored.

(Choices C and H) Creatinine levels and thyroid function tests should be monitored in patients taking lithium due to this drug's potential to adversely affect thyroid and renal function.

(Choice D) Although a baseline ECG is required and physicians should be alert to the development of cardiovascular symptoms suggestive of myocarditis, routine ECGs are not required. Among the second-generation

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(Choices C and H) Creatinine levels and thyroid function tests should be monitored in patients taking lithium due to this drug's potential to adversely affect thyroid and renal function.

(Choice D) Although a baseline ECG is required and physicians should be alert to the development of cardiovascular symptoms suggestive of myocarditis, routine ECGs are not required. Among the second-generation antipsychotics, ziprasidone is most often noted for causing a prolonged QT interval.

(Choices E and F) Liver function tests may be mildly elevated with the use of many psychotropic medications, including antipsychotics and anticonvulsants; thrombocytopenia can be caused by some anticonvulsants. However, routine monitoring of liver function tests and platelets is not required with clozapine.

(Choice G) Prolactin levels are not routinely monitored. Among the second-generation antipsychotics, risperidone has been associated with a greater risk of prolactin elevation.

Educational objective:
Patients treated with clozapine are required to have regular monitoring of the absolute neutrophil count due to the risk of life-threatening agranulocytosis.

References

- Medical management of patients on clozapine: a guide for internists

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A 46-year-old man is admitted to the hospital for atypical chest pain. His medical history is significant for hypertension controlled with amlodipine and hypercholesterolemia treated with atorvastatin; he has a family history of depression and heart disease. During review of his substance use history, the patient says that he has been a "regular drinker" for the last 5 years. He drinks a 6-pack of beer every night and has 2 more beers in the morning to help him "get through the day." He also admits to smoking marijuana occasionally but does not use tobacco or other illicit drugs. Which of the following symptoms or signs is most likely to appear earliest during this patient's hospitalization?

- A. Fluctuating arousal level
- B. Hypersomnolence
- C. Nystagmus
- D. Tonic-clonic seizures
- E. Tremulousness
- F. Visual hallucinations

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- A. Fluctuating arousal level (6%)
- ✗ B. Hypersomnolence (4%)
- C. Nystagmus (2%)
- D. Tonic-clonic seizures (4%)
- ✓ E. Tremulousness (75%)
- F. Visual hallucinations (6%)

Incorrect
Correct answer
E

75%
Answered correctly

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Explanation

Alcohol withdrawal syndrome		
Manifestations	**Symptoms/signs**	**Onset since last drink (hr)**

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Alcohol withdrawal syndrome		
Manifestations	**Symptoms/signs**	**Onset since last drink (hr)**
Mild withdrawal	Anxiety, insomnia, tremors, diaphoresis, palpitations, gastrointestinal upset, intact orientation	6-24
Seizures	Single or multiple generalized tonic-clonic	12-48
Alcoholic hallucinosis	Visual, auditory, or tactile; intact orientation; stable vital signs	12-48
Delirium tremens	Confusion, agitation, fever, tachycardia, hypertension, diaphoresis, hallucinations	48-96

Ethanol use leads to a number of biochemical changes in the CNS. It acutely potentiates the effects of GABA (the primary inhibitory neurotransmitter in the CNS) at GABA-A receptors, leading to sedation. **Chronic ethanol use** causes downregulation of **GABA receptors**. Alcohol also weakly inhibits excitatory NMDA receptors in the brain, and chronic exposure leads to upregulation of these receptors. These adaptive changes result in tolerance (ie, the need to increase the dose to achieve the desirable effect) and symptoms of withdrawal on abrupt alcohol cessation, a common occurrence during hospital admission. Both tolerance and withdrawal are signs of substance dependence.

Withdrawal symptoms can begin as early as **6 hours** after the patient's last drink, typically reach maximal intensity in 2-3 days, and subside in 4-5 days if the withdrawal is not severe. **Tremor**, or "the shakes," is the most common **initial finding**. Patients also typically have signs of mild autonomic dysfunction (eg, increased heart rate and respirations), gastrointestinal distress (eg, nausea, vomiting), and anxiety.

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primary inhibitory neurotransmitter in the CNS) at GABA-A receptors, leading to sedation. **Chronic ethanol use** causes downregulation of **GABA receptors**. Alcohol also weakly inhibits excitatory NMDA receptors in the brain, and chronic exposure leads to upregulation of these receptors. These adaptive changes result in tolerance (ie, the need to increase the dose to achieve the desirable effect) and symptoms of withdrawal on abrupt alcohol cessation, a common occurrence during hospital admission. Both tolerance and withdrawal are signs of substance dependence.

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(Choice A) Fluctuating arousal levels are characteristic of delirium tremens, a potentially fatal manifestation of alcohol withdrawal that typically begins 48-96 hours after the last drink. Other findings include sympathetic hyperactivity (eg, hyperthermia, hypertension), hallucinations (eg, visual, auditory, and/or tactile), and confusion.

(Choices B and C) Hypersomnolence and nystagmus can occur in acute ethanol intoxication but are not common during alcohol withdrawal. Most patients have insomnia attributable to increased CNS excitability during the withdrawal period.

(Choice D) Tonic-clonic seizures can occur 12-48 hours after the last drink and affect <5% of patients undergoing alcohol withdrawal.

(Choice F) Alcoholic hallucinosis (ie, visual hallucinations) can develop within 12-48 hours after the last drink. These early hallucinations are distinct from delirium tremens.

Educational objective:
Tremulousness is typically one of the earliest symptoms of alcohol withdrawal. Other common symptoms include gastrointestinal distress, agitation, anxiety, and autonomic disturbance. Delirium tremens is the most severe manifestation of alcohol withdrawal and typically begins 48-96 hours after the last drink.

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A 27-year-old man is brought to the emergency department by his wife. She says that he has been "acting crazy" for the last 2 weeks. He has hardly slept for the past 7 days and instead has worked on miscellaneous projects around the house. The patient spent several thousand dollars on new power tools to accomplish these tasks. When questioned, his speech is rapid and frenzied. He feels "spectacular" and is creating an "architectural masterpiece." The patient has had 2 previous depressive episodes. Which of the following medications is the most appropriate agent for long-term management of this patient?

- A. Bupropion
- B. Chlorpromazine
- C. Haloperidol
- D. Lorazepam
- E. Paroxetine
- F. Valproate

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- A. Bupropion (3%)
- ✗ B. Chlorpromazine (7%)
- C. Haloperidol (8%)
- D. Lorazepam (2%)
- E. Paroxetine (7%)
- ✓ F. Valproate (71%)

Incorrect
Correct answer
F

71%
Answered correctly

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Explanation

Mood stabilizers in bipolar disorder		
	Indications	**Adverse effects**
		• Diabetes insipidus

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Mood stabilizers in bipolar disorder		
	Indications	**Adverse effects**
Lithium	• Manic & depressive features	• Diabetes insipidus • Hypothyroidism • Tremor • Ebstein anomaly (teratogenic)
Valproate	• Manic features	• Hepatotoxicity • Neural tube defects (teratogenic)
Carbamazepine	• Manic features	• Aplastic anemia • SIADH • Neural tube defects (teratogenic)
Lamotrigine	• Depressive features	• Benign rash • Stevens-Johnson syndrome
SIADH = syndrome of inappropriate antidiuretic hormone secretion.		

This patient's euphoric mood, decreased need for sleep, hyperactivity, grandiosity, and pressured speech lasting more than a week are characteristic of an acute manic episode of **bipolar disorder**. Bipolar disorder is a highly recurrent illness requiring **maintenance treatment** with **mood-stabilizing medications** to decrease the risk of recurrent mood episodes. Preferred medications for bipolar maintenance treatment include lithium, the anticonvulsants **valproate** and lamotrigine, and the second-generation antipsychotic quetiapine.

(Choices A and E) Bupropion, a norepinephrine dopamine reuptake inhibitor, and paroxetine, a selective serotonin reuptake inhibitor, are antidepressants that have the potential to precipitate manic episodes. Antidepressant monotherapy should be avoided in bipolar maintenance treatment due to the risk of mood

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SIADH = syndrome of inappropriate antidiuretic hormone secretion.		

This patient's euphoric mood, decreased need for sleep, hyperactivity, grandiosity, and pressured speech lasting more than a week are characteristic of an acute manic episode of **bipolar disorder**. Bipolar disorder is a highly recurrent illness requiring **maintenance treatment** with **mood-stabilizing medications** to decrease the risk of recurrent mood episodes. Preferred medications for bipolar maintenance treatment include lithium, the anticonvulsants **valproate** and lamotrigine, and the second-generation antipsychotic quetiapine.

(Choices A and E) Bupropion, a norepinephrine dopamine reuptake inhibitor, and paroxetine, a selective serotonin reuptake inhibitor, are antidepressants that have the potential to precipitate manic episodes. Antidepressant monotherapy should be avoided in bipolar maintenance treatment due to the risk of mood destabilization.

(Choices B and C) Chlorpromazine and haloperidol are first-generation antipsychotics (FGAs) used in the treatment of schizophrenia. FGAs may be used in combination with lithium or valproate for treatment of severe mania, but are not used as monotherapy for maintenance treatment of bipolar disorder.

(Choice D) Lorazepam is a benzodiazepine that can be used as an adjunct to mood stabilizers in the treatment of acute mania; it is not recommended for maintenance treatment.

Educational objective:
The anticonvulsant valproate has mood-stabilizing properties and is an effective maintenance treatment for bipolar disorder. Other maintenance options for bipolar disorder include lithium, lamotrigine, and quetiapine.

References

- Effectiveness of psychotropic medications in the maintenance phase of bipolar disorder: a meta-analysis of randomized controlled trials.

Behavioral science Psychiatric/Behavioral & Substance Use Disorder Bipolar disorder

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A 54-year-old man arrives for an appointment with a new physician. At the front desk, the receptionist tells him that the physician is running behind schedule and gives him several forms to complete regarding his personal and family medical history. The patient politely agrees to fill them out and has a seat in the waiting area. However, when his paperwork is reviewed by the physician, it contains only the patient's signature. The patient says, "I'm sure a doctor with your education can take a good history." When asked if anything is wrong he says, "Oh, nothing, I'm fine." Which of the following best describes this patient's behavior?

- A. Acting out
- B. Displacement
- C. Passive aggression
- D. Reaction formation
- E. Splitting
- F. Suppression
- G. Undoing

Submit

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- A. Acting out (2%)
- B. Displacement (0%)
- ✓ C. Passive aggression (88%)
- D. Reaction formation (3%)
- E. Splitting (1%)
- F. Suppression (1%)
- G. Undoing (1%)

Correct

88% Answered correctly

03 secs Time Spent

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Explanation

Key defense mechanisms	
	• Acting out: Expressing unacceptable feelings through actions

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Explanation

Key defense mechanisms	
Immature	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist • Displacement: Transferring feelings to less threatening object/person • Intellectualization: Focusing on nonemotional aspects to avoid distressing feelings • Passive aggression: Avoiding conflict by expressing hostility covertly • Projection: Attributing one's own feelings to others • Rationalization: Justifying behavior to avoid difficult truths • Reaction formation: Transforming unacceptable feelings/impulses into the opposite • Regression: Reverting to earlier developmental stage • Splitting: Experiencing a person/situation as either all positive or all negative
Mature	• Sublimation: Channeling impulses into socially acceptable behaviors • Suppression: Putting unwanted feelings aside to cope with reality

This patient's **indirect expression of anger** about having to wait for the physician is an example of **passive aggression**. Rather than directly expressing his feelings, he agrees to fill out the forms and then resists performing the expected task. Other examples of behaviors used to indirectly defuse hostile feelings include procrastination, forgetfulness, and purposeful inefficiency. Backhanded compliments, sarcasm, and denial of being angry are also characteristic of passive-aggressive behavior.

(Choice A) Acting out is an immature defense mechanism that involves expressing unconscious wishes or impulses through overtly aggressive actions (eg, the patient tore up the forms in anger).

(Choice B) In displacement, negative feelings associated with a person or situation are transferred to another person or object that appears less threatening (eg, the patient did not express his anger to the physician but yelled

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performing the expected task. Other examples of behaviors used to indirectly defuse hostile feelings include procrastination, forgetfulness, and purposeful inefficiency. Backhanded compliments, sarcasm, and denial of being angry are also characteristic of passive-aggressive behavior.

(Choice A) Acting out is an immature defense mechanism that involves expressing unconscious wishes or impulses through overtly aggressive actions (eg, the patient tore up the forms in anger).

(Choice B) In displacement, negative feelings associated with a person or situation are transferred to another person or object that appears less threatening (eg, the patient did not express his anger to the physician but yelled at his wife instead).

(Choice D) In reaction formation, unacceptable feelings are transformed into their opposites (eg, the patient's irritation was redirected into being overly complimentary to the physician).

(Choice E) Splitting involves experiencing the self or others in extremes, either all positive or all negative (eg, the patient was told of the delay in his appointment time and then perceived the physician as horrible with no redeeming qualities).

(Choice F) Suppression involves consciously putting aside unwanted feelings (eg, the patient made a conscious decision to temporarily put aside his anger, completed the paperwork as directed, and was cordial to the physician during the appointment).

(Choice G) Undoing involves symbolically nullifying a guilt-provoking thought or feeling by confession or atonement (eg, this patient brought the physician a gift at his next appointment to negate his angry feelings). Undoing is commonly seen in obsessive-compulsive disorder.

Educational objective:
Passive aggression is the expression of angry feelings in a nonconfrontational manner.

References

- Understanding defense mechanisms.

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A 38-year-old woman is brought to the emergency department after causing a disturbance in a department store. The patient says that the government was releasing poisonous gas through the air vents of the store and that red-colored clothing items were a signal to evacuate. She was arrested a year ago for a similar incident. The patient dropped out of college at age 20. She lives with her parents and has never worked. She smokes a pack of cigarettes a day but does not use alcohol or drugs. Physical examination is unremarkable. On mental status examination the patient appears distracted and fearful. She reports hearing the voices of two men who criticize her actions continuously and have done so for years. Which of the following abnormalities is most likely associated with this patient's symptoms?

- A. Decreased dopamine activity in the mesolimbic pathway
- B. Decreased dopamine activity in the nigrostriatal pathway
- C. Decreased dopamine activity in the tuberoinfundibular pathway
- D. Increased dopamine activity in the mesolimbic pathway
- E. Increased dopamine activity in the nigrostriatal pathway
- F. Increased dopamine activity in the tuberoinfundibular pathway

Submit

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- A. Decreased dopamine activity in the mesolimbic pathway (7%)
- B. Decreased dopamine activity in the nigrostriatal pathway (2%)
- ✗ C. Decreased dopamine activity in the tuberoinfundibular pathway (2%)
- ✓ D. Increased dopamine activity in the mesolimbic pathway (73%)
- E. Increased dopamine activity in the nigrostriatal pathway (8%)
- F. Increased dopamine activity in the tuberoinfundibular pathway (6%)

Incorrect
Correct answer
D

73%
Answered correctly

03 secs
Time Spent

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Explanation

Dopaminergic pathways

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Explanation

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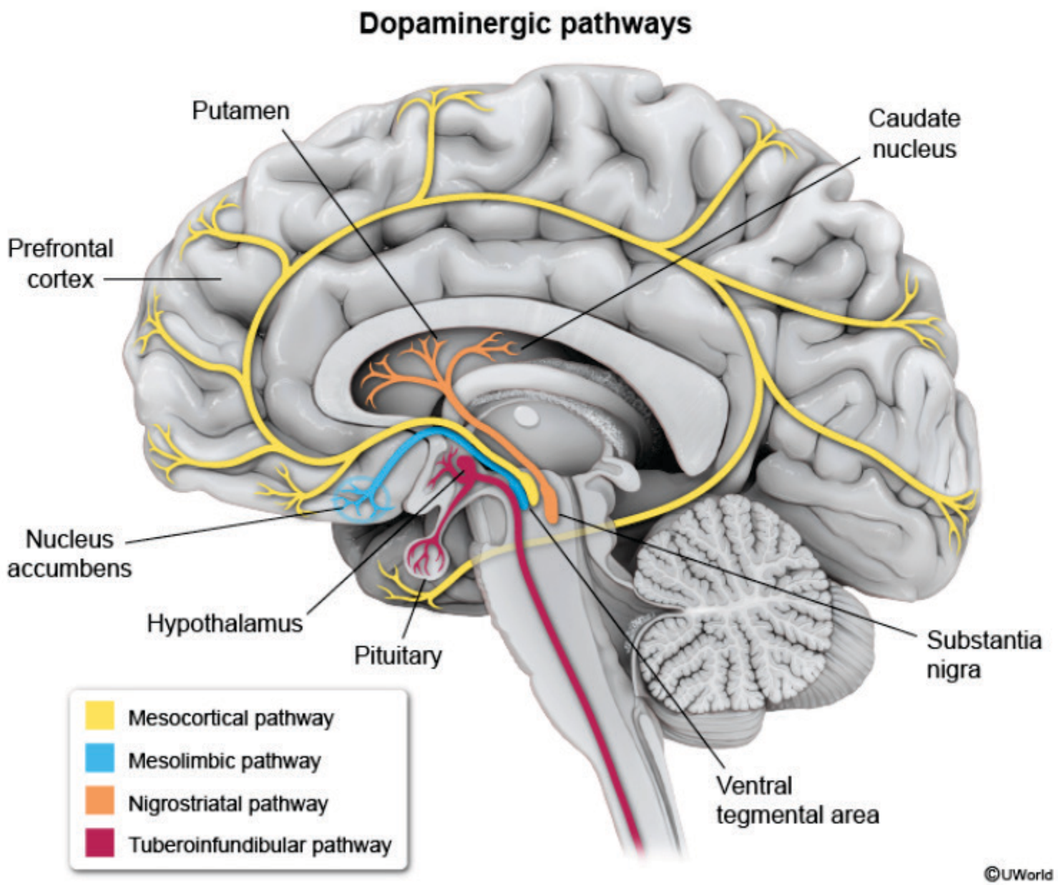

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This
hallu
disorder. Positive psychotic symptoms are thought to be caused by an **excess of dopamine** in the **mesolimbic**

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This patient likely has **schizophrenia**, a psychotic disorder with a prevalence of 1 percent worldwide. Her auditory hallucinations and delusions of being poisoned and receiving signals are characteristic **positive symptoms** of the disorder. Positive psychotic symptoms are thought to be caused by an **excess of dopamine** in the **mesolimbic dopamine pathway**. The mesolimbic pathway projects from the ventral tegmental area to various regions throughout the limbic system.

The treatment of choice for schizophrenia is antipsychotic medication. Most antipsychotics are dopamine antagonists that produce their therapeutic effects (ie, decreased intensity of delusions and hallucinations) by decreasing dopamine activity in the mesolimbic pathway **(Choice A)**. Dopamine antagonism in the nigrostriatal and tuberoinfundibular pathways accounts for some of the common side effects of antipsychotics.

(Choices B and E) The nigrostriatal pathway extends from the substantia nigra to the basal ganglia and is involved in the coordination of movement. Decreased dopamine activity in the nigrostriatal pathway causes the extrapyramidal side effects of antipsychotics (eg, acute dystonic reactions, akathisia, drug-induced parkinsonism). Increased dopamine activity in the nigrostriatal pathway is thought to be involved in some movement disorders such as chorea and tics.

(Choices C and F) The tuberoinfundibular dopamine pathway projects from the hypothalamus to the pituitary gland. Normally, neurons in the tuberoinfundibular pathway secrete dopamine, which inhibits prolactin release from the anterior pituitary gland. Antipsychotics can cause hyperprolactinemia by blocking the inhibition of dopamine activity in the tuberoinfundibular pathway, resulting in amenorrhea, galactorrhea, gynecomastia, and sexual dysfunction.

Educational objective:
Positive symptoms of schizophrenia (eg, delusions, hallucinations) are associated with increased activity of dopamine in the mesolimbic pathway. Antipsychotics work by antagonizing dopamine receptors in this pathway.

References

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A 24-year-old man comes to the office for treatment of opioid use disorder. The patient has a 6-year history of heroin use, which he says has cost him most of his savings. His boss has spoken to him about his erratic moods and inconsistent work performance, and he is now in danger of losing his job. The patient asks for help, saying, "I have tried so hard to do this on my own. My parents have spent a lot of money on counseling. It helps for a while, but then I go back to using. They are fed up and refuse to see me anymore. I don't want to use, but the craving is so strong." The physician refers the patient to an opioid treatment program where he is started on maintenance therapy with methadone. During the next followup appointment, he reports a marked reduction in his cravings. Which of the following properties of the administered drug is most likely responsible for the improvement in this patient's condition?

- A. Long half-life
- B. Low potency
- C. Low risk of dependence
- D. Low risk of respiratory depression
- E. Low risk of withdrawal
- F. Partial agonist activity

Submit

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A 24-year-old man comes to the office for treatment of opioid use disorder. The patient has a 6-year history of heroin use, which he says has cost him most of his savings. His boss has spoken to him about his erratic moods and inconsistent work performance, and he is now in danger of losing his job. The patient asks for help, saying, "I have tried so hard to do this on my own. My parents have spent a lot of money on counseling. It helps for a while, but then I go back to using. They are fed up and refuse to see me anymore. I don't want to use, but the craving is so strong." The physician refers the patient to an opioid treatment program where he is started on maintenance therapy with methadone. During the next followup appointment, he reports a marked reduction in his cravings. Which of the following properties of the administered drug is most likely responsible for the improvement in this patient's condition?

- ✓ A. Long half-life (54%)
- ✗ B. Low potency (1%)
- C. Low risk of dependence (3%)
- D. Low risk of respiratory depression (0%)
- E. Low risk of withdrawal (3%)
- F. Partial agonist activity (36%)

Incorrect
Correct answer
A

54%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Opioid use disorder is a significant health concern in the United States and has high levels of morbidity and

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Opioid use disorder is a significant health concern in the United States and has high levels of morbidity and mortality. Opioids are prescribed for their analgesic properties, but they also have euphoric effects with the potential for tolerance, dependence, and abuse. Both street and prescription opioids have a high abuse potential. Treatment of addiction includes the use of alternative opioid agonists with fewer euphoric effects and less potential for acute withdrawal and craving, thereby allowing patients to function more productively on a daily basis. In the United States, the most commonly used agonists are **methadone** and buprenorphine.

Methadone is a **full mu-opioid receptor agonist** used for withdrawal and maintenance treatment for opioid use disorder. It has a **long half-life**, which allows it to effectively **suppress cravings and withdrawal** symptoms; it also blocks the euphoric effects of other opioids by maintaining high tolerance levels **(Choice B)**. Adverse effects of methadone include QT interval prolongation and respiratory depression, accounting for its lethality in overdose.

(Choices C and E) Methadone, like other opioids, produces dependence, and abrupt discontinuation of methadone causes withdrawal symptoms. The symptoms of methadone withdrawal are more prolonged and less severe than those of heroin due to methadone's long half-life but are still present.

(Choice D) Methadone can cause respiratory depression with the potential for lethality in overdose, especially when combined with other CNS depressants.

(Choice F) Buprenorphine is a partial agonist used alone or with naloxone (an opioid antagonist) for treatment of opioid use disorder. Buprenorphine is less likely to cause respiratory depression and mortality in overdose compared with methadone.

Educational objective:
Methadone is a potent, long-acting opioid agonist used in the maintenance treatment of opioid use disorder. Its prolonged effects suppress withdrawal symptoms and cravings.

References

- American Society of Addiction Medicine (ASAM) national practice guideline for the use of medications in the treatment of addiction involving opioid use

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A 13-year-old boy is brought to the office due to anxiety and behavioral problems at school. Although he has good grades, he frequently feels overwhelmed at school and his mother worries that he is socially awkward and has no friends. The patient often appears anxious and uncomfortable in new social situations. He insists on sitting in the same row and seat in every class and has had several inappropriate outbursts when told by teachers that this was not possible. After school, the patient prefers to spend time at home. His mother observes that he is obsessed with dates and comparing solar and lunar calendars and can discuss this for hours, but has difficulty shifting to other topics of conversation. The patient was born at full term, and developmental milestones were within normal range. Physical examination is unremarkable. Which of the following is the most likely explanation of this patient's behavior?

- A. Autism spectrum disorder
- B. Obsessive compulsive disorder
- C. Obsessive compulsive personality disorder
- D. Schizoid personality disorder
- E. Separation anxiety disorder
- F. Social anxiety disorder

Submit

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A 13-year-old boy is brought to the office due to anxiety and behavioral problems at school. Although he has good grades, he frequently feels overwhelmed at school and his mother worries that he is socially awkward and has no friends. The patient often appears anxious and uncomfortable in new social situations. He insists on sitting in the same row and seat in every class and has had several inappropriate outbursts when told by teachers that this was not possible. After school, the patient prefers to spend time at home. His mother observes that he is obsessed with dates and comparing solar and lunar calendars and can discuss this for hours, but has difficulty shifting to other topics of conversation. The patient was born at full term, and developmental milestones were within normal range. Physical examination is unremarkable. Which of the following is the most likely explanation of this patient's behavior?

- ✓ A. Autism spectrum disorder (70%)
- ✗ B. Obsessive compulsive disorder (9%)
- C. Obsessive compulsive personality disorder (12%)
- D. Schizoid personality disorder (4%)
- E. Separation anxiety disorder (0%)
- F. Social anxiety disorder (3%)

Incorrect
Correct answer
A

70%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Autism spectrum disorder

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Autism spectrum disorder	

Clinical features	• Deficits in social communication & interactions with onset in early development
	  ◦ Sharing of emotions or interests
	  ◦ Nonverbal communication
	  ◦ Developing & understanding relationships
	• Restricted, repetitive patterns of behavior
	  ◦ Repetitive movements or speech
	  ◦ Insistence on sameness/routines
	  ◦ Intense, fixated interests
	  ◦ Adverse responses to sensory input
	• May occur with or without language & intellectual impairment

This patient's behavior is most consistent with mild, high-functioning **autism spectrum disorder** (ASD). Patients diagnosed with ASD later in childhood and adolescence frequently have normal or near-normal language and intellectual ability and come to clinical attention when social and academic demands increase, exposing a lack of flexibility and social skill deficits (more severe ASD is usually diagnosed by age 5). Key features of ASD include **deficits in social communication** and reciprocal social interactions as well as **restricted, repetitive interests** and **stereotyped behaviors**.

This patient's lack of friends, social isolation, insistence on sameness, intensely fixated interests, and trouble taking turns in conversation are characteristic. Patients with autism have difficulty interpreting and responding appropriately to nonverbal aspects of communication. Abnormal eye contact, stilted, overly formal speech, abnormal sensory sensitivity, and unusual repetitive movements (hand flapping, rocking) are other common findings.

(Choice B) Obsessive-compulsive disorder may also present with obsessive interests and insistence on routines.

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and **stereotyped behaviors**.

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(Choice B) Obsessive-compulsive disorder may also present with obsessive interests and insistence on routines. However, this patient lacks the intrusive obsessional thoughts and compulsive rituals performed in response to these thoughts required for this diagnosis (eg, thoughts of contamination leading to cleaning rituals).

(Choices C and D) Personality disorders are not diagnosed when the behavior is better explained by another mental disorder and are generally not diagnosed before age 18. Patients with obsessive-compulsive personality disorder are preoccupied with orderliness and control but do not have deficits in social communication. Patients with schizoid personality disorder are socially isolated and disinterested in relationships, but do not exhibit the restricted interests and repetitive patterns seen in ASD.

(Choice E) Separation anxiety disorder is characterized by developmentally inappropriate and excessive anxiety related to separation from the primary attachment figure.

(Choice F) Patients with social anxiety disorder typically have normal communication skills and an interest in socializing, but they avoid social situations due to fear of being judged. In patients with ASD, social anxiety is related to their lack of social skills.

Educational objective:
Patients with milder forms of autism spectrum disorder frequently have normal language and cognitive development. Characteristic features include deficits in social communication and reciprocal social interactions, restricted interests, and behavioral rigidity that become more apparent as social and academic demands increase.

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A 21-year-old woman comes to the office at her mother's urging due to irritability and low mood. Two months ago, the patient was sexually assaulted in the parking lot of her workplace. Since then, she has felt that "the world is not a safe place" and is reluctant to go back to work, preferring to stay home. In the middle of the day she will "space out" and hear the voice of her assailant, "as if I am right there in the parking lot." At other times, she feels a sense of unreality as if she is outside her body and cannot recall the exact details about what happened, and says that, "I feel like I am going crazy." The patient has become withdrawn and either avoids her friends or becomes "snappy" when they visit her. She has lost interest in her hobbies of writing poetry and exercising. There is a family history of major depression in the patient's mother and schizoaffective disorder in her maternal grandmother. Which of the following is the most likely diagnosis?

- A. Acute stress disorder
- B. Agoraphobia
- C. Brief psychotic disorder
- D. Depersonalization/derealization disorder
- E. Dissociative amnesia
- F. Major depressive disorder
- G. Post-traumatic stress disorder

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A 21-year-old woman comes to the office at her mother's urging due to irritability and low mood. Two months ago, the patient was sexually assaulted in the parking lot of her workplace. Since then, she has felt that "the world is not a safe place" and is reluctant to go back to work, preferring to stay home. In the middle of the day she will "space out" and hear the voice of her assailant, "as if I am right there in the parking lot." At other times, she feels a sense of unreality as if she is outside her body and cannot recall the exact details about what happened, and says that, "I feel like I am going crazy." The patient has become withdrawn and either avoids her friends or becomes "snappy" when they visit her. She has lost interest in her hobbies of writing poetry and exercising. There is a family history of major depression in the patient's mother and schizoaffective disorder in her maternal grandmother. Which of the following is the most likely diagnosis?

- A. Acute stress disorder (11%)
- B. Agoraphobia (0%)
- ✗ C. Brief psychotic disorder (0%)
- D. Depersonalization/derealization disorder (12%)
- E. Dissociative amnesia (1%)
- F. Major depressive disorder (1%)
- ✓ G. Post-traumatic stress disorder (73%)

Incorrect
Correct answer
G

73%
Answered correctly

03 secs
Time Spent

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Explanation

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Posttraumatic stress disorder	
Clinical features	• Exposure to life-threatening trauma • Nightmares, flashbacks, intrusive memories • Avoidance of reminders, amnesia for event • Emotional detachment, negative mood, decreased interest in activities • Sleep disturbance, hypervigilance, irritability • Duration >1 month

This patient's 2-month history of intrusive flashbacks, avoidance, dissociative symptoms (amnesia, depersonalization), and emotional detachment following a traumatic incident are suggestive of **post-traumatic stress disorder (PTSD)**. Patients suffering from PTSD repeatedly relive a traumatic, life-threatening event in the form of **nightmares and/or flashbacks** (in which the patient feels as if the traumatic event is actually recurring). Individuals will often **avoid** people, places, and activities that remind them of the traumatic event and experience sleep disturbance, **hypervigilance**, low mood, and **irritability**. PTSD requires persistent symptoms for **≥1 month**.

(Choice A) Acute stress disorder involves symptoms similar to those observed in PTSD, which last 3 days to 1 month after trauma exposure. Symptoms may remit or progress to PTSD after this time. This patient has symptoms lasting 2 months and so meets the criteria for PTSD.

(Choice B) In agoraphobia, the patient avoids situations where escape may not be possible or help is not available if panic or other embarrassing symptoms occur. If the avoidance is secondary to a traumatic event and the criteria for PTSD are met, PTSD is the accurate diagnosis.

(Choice C) This patient's experience of hearing her assailant's voice is characteristic of an intrusive flashback that occurs in PTSD. Brief psychotic disorder is characterized by acute onset of psychotic symptoms (delusions, hallucinations) lasting ≥1 day and ≤1 month.

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stress disorder (PTSD). Patients suffering from PTSD repeatedly relive a traumatic, life-threatening event in the form of **nightmares and/or flashbacks** (in which the patient feels as if the traumatic event is actually recurring). Individuals will often **avoid** people, places, and activities that remind them of the traumatic event and experience sleep disturbance, **hypervigilance**, low mood, and **irritability**. PTSD requires persistent symptoms for **≥1 month**.

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(Choice C) This patient's experience of hearing her assailant's voice is characteristic of an intrusive flashback that occurs in PTSD. Brief psychotic disorder is characterized by acute onset of psychotic symptoms (delusions, hallucinations) lasting ≥1 day and ≤1 month.

(Choices D and E) Patients with PTSD often experience a range of dissociative symptoms, such as derealization (detachment from surroundings), depersonalization (detachment from self), or a lapse of autobiographical memory regarding the traumatic event (dissociative amnesia). If the dissociation is part of a cluster of symptoms that meets the criteria for PTSD, PTSD is the overarching and correct diagnosis.

(Choice F) Individuals with PTSD commonly experience negative mood states, including decreased interest in activities and feelings of detachment from others. However, this patient does not meet the full criteria for major depression, and her social withdrawal and loss of interest are better explained by PTSD.

Educational objective:
Post-traumatic stress disorder is characterized by intrusive thoughts, nightmares, flashbacks, avoidance of trauma reminders, hypervigilance, and sleep disturbance lasting ≥1 month.

References

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A 61-year old woman comes to the office due to insomnia. She has had difficulty falling asleep since her divorce was finalized 2 months ago and she relocated to a new state to be closer to her daughter and grandchildren. The patient's sleep is restless and she is frequently awakened by household noises. During this time, she has also felt anxious and tense. The patient is overwhelmed by financial worries and the responsibilities of living on her own. Although previously outgoing, she now avoids opportunities to meet new people and socializes only with her daughter. The patient has no psychiatric history but does have a history of hypothyroidism treated with levothyroxine. Physical examination is unremarkable. TSH is 1.6 μU/mL. Which of the following is the most likely diagnosis?

- A. Acute stress disorder
- B. Adjustment disorder
- C. Anxiety disorder due to a medical condition
- D. Generalized anxiety disorder
- E. Medication-induced anxiety disorder
- F. Normal stress response

Submit

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A 61-year old woman comes to the office due to insomnia. She has had difficulty falling asleep since her divorce was finalized 2 months ago and she relocated to a new state to be closer to her daughter and grandchildren. The patient's sleep is restless and she is frequently awakened by household noises. During this time, she has also felt anxious and tense. The patient is overwhelmed by financial worries and the responsibilities of living on her own. Although previously outgoing, she now avoids opportunities to meet new people and socializes only with her daughter. The patient has no psychiatric history but does have a history of hypothyroidism treated with levothyroxine. Physical examination is unremarkable. TSH is 1.6 µU/mL. Which of the following is the most likely diagnosis?

- A. Acute stress disorder (7%)
- ✓ B. Adjustment disorder (63%)
- C. Anxiety disorder due to a medical condition (1%)
- D. Generalized anxiety disorder (7%)
- E. Medication-induced anxiety disorder (1%)
- F. Normal stress response (20%)

Correct

63% Answered correctly

05 secs Time Spent

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Explanation

This patient developed anxiety symptoms in the setting of a recent stressor (eg, divorce and relocation); the absence of previous anxiety and brief duration make **adjustment disorder** the most appropriate diagnosis.

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This patient developed anxiety symptoms in the setting of a recent stressor (eg, divorce and relocation); the absence of previous anxiety and brief duration make **adjustment disorder** the most appropriate diagnosis. Adjustment disorder involves emotional or behavioral symptoms (eg, anxiety, depression, disturbance of conduct) developing **within 3 months** of an **identifiable stressor** and lasting no longer than 6 months once the stressor or its consequences ceases. Symptoms in an adjustment disorder must be **distressing** and **impairing** (eg, this patient seeks medical attention for insomnia and is socially isolative) but are insufficient to meet full criteria for another mental disorder.

(Choice A) In acute stress disorder, the symptoms of re-experiencing (ie, intrusive memories and flashbacks), avoidance, negative mood, dissociation, and hyperarousal last from 3 days to 1 month following a life-threatening traumatic event. This patient's symptoms do not meet the criteria for this disorder, and her stressor is not life-threatening.

(Choices C and E) Although untreated thyroid conditions and excessive doses of levothyroxine may cause mood and sleep disturbance, this patient's hypothyroidism is adequately controlled, as evidenced by her normal TSH level.

(Choice D) Although anxiety, tension, and poor sleep are symptoms of generalized anxiety disorder, this diagnosis requires that symptoms last ≥6 months.

(Choice F) A normal stress response is differentiated from an adjustment disorder by milder symptoms, lack of marked distress, and lack of social or occupational impairment. This patient's significant distress and impairment make adjustment disorder the correct diagnosis.

Educational objective:
Adjustment disorder involves emotional or behavioral symptoms occurring within 3 months of an identifiable stressor. The diagnosis is indicated when the patient has significant distress and impairment but does not meet full criteria for another mental disorder.

References

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A 37-year-old woman with a history of recurrent major depressive disorder comes to the office. Her father died last month after a long illness, and she is concerned that her depression is returning. The patient has little appetite, sleeps poorly, and has difficulty concentrating at her job as a teacher. She recently stopped going to the gym and socializing with friends, activities that she used to enjoy. She has been collecting pills from half-empty bottles of old medication and has considered taking all of them at once. The patient has no history of suicide attempts. Her mother completed suicide at age 40. Which of the following is the most important factor in assessing this patient's suicide risk?

- A. Family history of suicide
- B. Increasing social isolation
- C. Lack of sleep
- D. Medication access
- E. Recent bereavement
- F. Recurrent episodes of depression

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A 37-year-old woman with a history of recurrent major depressive disorder comes to the office. Her father died last month after a long illness, and she is concerned that her depression is returning. The patient has little appetite, sleeps poorly, and has difficulty concentrating at her job as a teacher. She recently stopped going to the gym and socializing with friends, activities that she used to enjoy. She has been collecting pills from half-empty bottles of old medication and has considered taking all of them at once. The patient has no history of suicide attempts. Her mother completed suicide at age 40. Which of the following is the most important factor in assessing this patient's suicide risk?

- A. Family history of suicide (29%)
- ✗ B. Increasing social isolation (7%)
- C. Lack of sleep (0%)
- ✓ D. Medication access (49%)
- E. Recent bereavement (4%)
- F. Recurrent episodes of depression (7%)

Incorrect
Correct answer
D

49%
Answered correctly

04 secs
Time Spent

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Version

Explanation

Suicide risk assessment: evaluate ideation, method, plan, intent	
Suicidal ideation	• Wish to die, not wake up (passive) • Thoughts of killing self (active)

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Suicide risk assessment: evaluate ideation, method, plan, intent	
Suicidal ideation	• Wish to die, not wake up (passive) • Thoughts of killing self (active)
Method/ accessibility	• Thoughts of specific method (eg, weapons, pills) • Accessibility of method (eg, medication, gun) • Lethality of method (eg, gunshot to head, jumping from high floor, potentially lethal overdose of pills)
Preparations/ planning	• Steps taken toward making a suicide attempt: collecting pills, obtaining a gun, giving valuables away, writing a will or suicide note • Specific planning of time, place, details
Intent	• Strength of intention to act on suicidal thoughts • Time frame (next 48 hr, weeks to months)

Assessment of **suicide risk** requires detailed questioning to determine the presence of suicidal thoughts and plans. Suicidal thoughts can be differentiated as passive (wish to be dead or not wake up) versus **active suicidal ideation** (actual thoughts of killing oneself). Patients who have active suicidal ideation should be further questioned about whether they have **thought about specific methods** of killing themselves and whether they have made any preparations and plans for suicide. Finally, the strength of the patient's intention to carry out the suicide plan should be assessed.

Although this patient has several risk factors, it is her recent preparation for suicide (ie, **collecting old medication** with a plan of taking an overdose) that is the most concerning. Patients with active suicidal ideation and intent who have **made preparations** to carry out a specific method of suicide are at **highest risk**. Hospitalization may be necessary to ensure their safety.

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Intent	• Strength of intention to act on suicidal thoughts • Time frame (next 48 hr, weeks to months)

Assessment of **suicide risk** requires detailed questioning to determine the presence of suicidal thoughts and plans. Suicidal thoughts can be differentiated as passive (wish to be dead or not wake up) versus **active suicidal ideation** (actual thoughts of killing oneself). Patients who have active suicidal ideation should be further questioned about whether they have **thought about specific methods** of killing themselves and whether they have made any preparations and plans for suicide. Finally, the strength of the patient's intention to carry out the suicide plan should be assessed.

Although this patient has several risk factors, it is her recent preparation for suicide (ie, **collecting old medication** with a plan of taking an overdose) that is the most concerning. Patients with active suicidal ideation and intent who have **made preparations** to carry out a specific method of suicide are at **highest risk**. Hospitalization may be necessary to ensure their safety.

(Choices A and F) This patient's other risk factors for suicide include her family history of suicide (considered a static risk factor) and recurrent episodes of major depressive disorder. They are not as important as her recent active suicidal ideation associated with a specific method and preparatory behavior.

(Choices B and C) Social isolation and insomnia are common symptoms of major depression that occur in patients with and without suicidality. Although they increase the risk for suicide, they are not as critical as this patient's active suicidal ideation and preparations.

(Choice E) Although suicide risk increases in patients who have lost a loved one, this is not as strong a risk factor as having active suicidal ideation with a plan.

Educational objective:
Patients with suicidal thoughts should be assessed for intent and plan. Patients with active suicidal ideation and intent who have made preparations to carry out a specific method of suicide are at highest risk.

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A 21-year-old woman comes to the office due to constipation and vague abdominal pain. She says, "For the last few months I have felt bloated and my stomach doesn't feel right." Review of systems is notable for irregular menses and occasional fatigue. Medical history is significant for a broken femur at age 6 but is otherwise noncontributory. Family history is significant for Graves disease in her father and primary myelofibrosis in her paternal grandmother. The patient smokes a pack of cigarettes daily and drinks wine when relaxing with friends. She does not use illicit drugs. Temperature is 37.2 C (99 F), blood pressure is 90/60 mm Hg, pulse is 118/min, and respirations are 16/min. BMI is 25.6 kg/m^2. Physical examination shows eroded enamel of the teeth.

Laboratory results are as follows:

Serum chemistry	
Sodium	134 mEq/L
Potassium	3.2 mEq/L
Chloride	92 mEq/L
Bicarbonate	30 mEq/L
Liver function studies	
Aspartate aminotransferase (SGOT)	20 U/L
Alanine aminotransferase (SGPT)	24 U/L
Amylase	161 U/L
Lipase	32 U/L (normal: 12-61)

Which of the following is the most likely cause of this patient's condition?

A. Acute pancreatitis

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Serum chemistry

Sodium	134 mEq/L
Potassium	3.2 mEq/L
Chloride	92 mEq/L
Bicarbonate	30 mEq/L

Liver function studies

Aspartate aminotransferase (SGOT)	20 U/L
Alanine aminotransferase (SGPT)	24 U/L
Amylase	161 U/L
Lipase	32 U/L (normal: 12-61)

Which of the following is the most likely cause of this patient's condition?

- A. Acute pancreatitis
- B. Alcohol use disorder
- C. Bulimia nervosa
- D. Hypothyroidism
- E. Irritable bowel syndrome
- F. Sjögren syndrome

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Serum chemistry

Sodium	134 mEq/L
Potassium	3.2 mEq/L
Chloride	92 mEq/L
Bicarbonate	30 mEq/L

Liver function studies

Aspartate aminotransferase (SGOT)	20 U/L
Alanine aminotransferase (SGPT)	24 U/L
Amylase	161 U/L
Lipase	32 U/L (normal: 12-61)

Which of the following is the most likely cause of this patient's condition?

- ✗ A. Acute pancreatitis (5%)
- B. Alcohol use disorder (1%)
- ✓ C. Bulimia nervosa (82%)
- D. Hypothyroidism (4%)
- E. Irritable bowel syndrome (3%)
- F. Sjögren syndrome (3%)

Incorrect
Correct answer
C

82%
Answered correctly

10 secs
Time Spent

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Explanation

Bulimia nervosa	
Clinical features	• Recurrent episodes of binge eating & inappropriate compensatory behavior (eg, vomiting, laxatives, excessive exercise) • Excessive preoccupation with body weight & shape • Body weight within or above normal range • Symptoms: abdominal pain, bloating, constipation, lethargy, irregular menses
Physical examination	• Hypotension, tachycardia • Dental enamel erosion, caries • Dorsal hand calluses • Parotid gland swelling
Laboratory findings	• Hypokalemia • Metabolic alkalosis

This patient's hypotension, tachycardia, **dental erosion**, and electrolyte abnormalities (eg, **hypokalemia**, hypochloremia, elevated bicarbonate [likely due to **metabolic alkalosis**]) are consistent with self-induced vomiting, suggesting a diagnosis of **bulimia nervosa** (BN). Chronic vomiting can also result in **calluses** on the **dorsum of the hands** (Russell sign) and **enlarged parotid** glands with resultant increased salivary amylase.

Patients with BN are excessively preoccupied with their weight and shape and engage in repeated episodes of binge eating and inappropriate compensatory behaviors (eg, vomiting, laxatives, diuretics, fasting, excessive exercise) to prevent weight gain. Other common signs of BN include dry skin, menstrual irregularities, abdominal bloating, and constipation.

(Choice A) Serum amylase, which does not typically differentiate between salivary and pancreatic origins, can be

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binge eating and inappropriate compensatory behaviors (eg, vomiting, laxatives, diuretics, fasting, excessive exercise) to prevent weight gain. Other common signs of BN include dry skin, menstrual irregularities, abdominal bloating, and constipation.

(Choice A) Serum amylase, which does not typically differentiate between salivary and pancreatic origins, can be elevated in both pancreatic disease and BN; however, lipase would also be significantly increased in pancreatic disease, whereas this patient has increased amylase alone. Acute pancreatitis commonly presents with pain and an acute abdomen.

(Choice B) With heavy alcohol use, expected findings would include elevated liver enzymes and other signs suggestive of abuse and dependence (eg, inability to control drinking, use in hazardous situations, tolerance, withdrawal symptoms).

(Choice D) Hypothyroidism is characterized by weakness, fatigue, cold intolerance, constipation, weight changes, menorrhagia, dry skin, and bradycardia. It would not explain this patient's tachycardia, dental erosion, hypokalemic metabolic alkalosis, or hyperamylasemia.

(Choice E) Irritable bowel syndrome is a functional gastrointestinal disorder characterized by chronic abdominal pain, constipation, and/or diarrhea. It is a diagnosis of exclusion and would not explain this patient's physical examination and laboratory findings.

(Choice F) Sjögren syndrome, an autoimmune disorder mainly affecting women, presents with dry eyes and a dry mouth. Lack of normal saliva production can lead to enlarged salivary glands and dental caries. Sjögren syndrome would not explain this patient's hypokalemic metabolic alkalosis.

Educational objective:
Bulimia nervosa is characterized by episodes of binge eating and compensatory weight-reduction behaviors. Signs of self-induced vomiting include hypokalemia, metabolic alkalosis, parotid gland enlargement, dorsal hand calluses, and dental erosion.

References

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A 43-year-old man comes to the office due to depression. He feels sad and unmotivated, sleeps 12 hours a day, and has increased appetite, poor concentration at work, and fleeting thoughts of suicide. The patient has no medical history and laboratory evaluation is unremarkable. Major depressive disorder is diagnosed and antidepressant medication administered. Several weeks after starting the medication, the patient's depressive symptoms are mildly improved, but he is now distressed by a significant decrease in libido and impaired sexual performance. He is considering stopping the medication and requests an alternate treatment. Which of the following drugs is most appropriate for this patient?

- A. Bupropion
- B. Citalopram
- C. Imipramine
- D. Sertraline
- E. Trazodone
- F. Venlafaxine

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- ✓ A. Bupropion (76%)
- ✗ B. Citalopram (1%)
- C. Imipramine (2%)
- D. Sertraline (4%)
- E. Trazodone (7%)
- F. Venlafaxine (7%)

Incorrect
Correct answer
A

76%
Answered correctly

03 secs
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Explanation

This patient was most likely treated with a **selective serotonin reuptake inhibitor** (SSRI), a commonly prescribed initial treatment for major depressive disorder that causes **sexual dysfunction** in up to 50% of patients. SSRI-related sexual side effects include decreased libido, decreased arousal, anorgasmia, and increased ejaculation

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This patient was most likely treated with a **selective serotonin reuptake inhibitor** (SSRI), a commonly prescribed initial treatment for major depressive disorder that causes **sexual dysfunction** in up to 50% of patients. SSRI-related sexual side effects include decreased libido, decreased arousal, anorgasmia, and increased ejaculation latency.

Bupropion is an antidepressant that **does not cause sexual dysfunction**. It is classified as a norepinephrine-dopamine reuptake inhibitor. Because of its stimulating effects, bupropion is useful in treating depression associated with hypersomnia and low energy. Bupropion is also preferred because it causes less weight gain compared with other antidepressants.

Bupropion is contraindicated in patients with bulimia nervosa, anorexia nervosa, and seizure disorders because it lowers the seizure threshold.

(Choices B and D) Citalopram and sertraline are SSRIs that would likely cause sexual dysfunction in this patient. Switching to a non-SSRI such as bupropion is more likely to improve his sexual dysfunction.

(Choice C) Imipramine is a tricyclic antidepressant with numerous side effects, including sexual dysfunction. These types of antidepressants are dangerous in overdose because of cardiotoxicity, so they are not a first-line treatment for depression.

(Choice E) Trazodone is a highly sedating antidepressant that can be helpful for patients with insomnia. Trazodone can cause sexual dysfunction and priapism, a rare but serious side effect.

(Choice F) Venlafaxine is a serotonin-norepinephrine reuptake inhibitor that can cause sexual side effects.

Educational objective:
Sexual dysfunction is seen in up to 50% of patients treated with selective serotonin reuptake inhibitors. Bupropion, a norepinephrine-dopamine reuptake inhibitor, is a first-line treatment for major depressive disorder and does not cause sexual dysfunction.

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A 17-year-old girl is brought to the office by her parents for evaluation following the accidental drowning of her younger sister a week ago. The patient, her sister, and 2 friends had gone swimming in the ocean. When the sister became submerged, the patient attempted to rescue her but was overpowered by strong rip currents and was forced to return to shore. The mother is concerned that her daughter seems to be unaware of her sister's death and believes she is "in denial." The patient was unable to answer questions from the police about the drowning and reports she cannot remember any details of what happened that day. Physical examination is unremarkable. On mental status examination, the patient is alert and fully oriented. She becomes upset and confused when the incident is discussed. Which of the following is the most likely diagnosis?

- A. Adjustment disorder
- B. Complicated grief reaction
- C. Conversion disorder
- D. Dissociative amnesia
- E. Posttraumatic stress disorder

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- A. Adjustment disorder (5%)
- ✗ B. Complicated grief reaction (19%)
- C. Conversion disorder (1%)
- ✓ D. Dissociative amnesia (64%)
- E. Posttraumatic stress disorder (9%)

Incorrect
Correct answer
D

64%
Answered correctly

03 secs
Time Spent

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Explanation

This patient's inability to recall an event that cannot be explained as ordinary forgetfulness is consistent with **dissociative amnesia**. This disorder typically consists of localized or **selective** amnesia for a **particular event**, as in this patient's inability to recall her sister's drowning, but it can also involve more **generalized** amnesia for personal identity and **autobiographical history**. Onset is typically sudden and preceded by overwhelming or

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Definitive diagnosis requires ruling out the effects of a substance (eg, alcohol-induced blackouts, illicit substances, medications) or a neurologic condition (eg, brain trauma). Amnesia involving traumatic events can also occur as a feature of acute or posttraumatic stress disorder (PTSD).

(Choice A) Adjustment disorder is characterized by psychologic symptoms that occur in response to an identifiable, non–life threatening psychosocial stressor (eg, relationship conflict, job loss). Adjustment disorder would not explain this patient's sudden amnesia in response to an overwhelming traumatic event.

(Choice B) Although complicated grief reaction may include a sense of disbelief, it is a persistent disorder that lasts at least 6-12 months after the loss. It is characterized by intense yearning for the deceased, ruminative thoughts, and dysfunctional behavior.

(Choice C) Conversion disorder (functional neurologic symptom disorder) is characterized by motor or sensory neurologic symptoms (eg, weakness, abnormal movements, nonepileptic seizures) that are inconsistent with recognized neurologic disease. Although the onset is typically sudden and may include dissociative symptoms, this patient lacks the motor and sensory symptoms necessary for this diagnosis.

(Choice E) Although a history of trauma and amnesia for the traumatic event is also seen in PTSD, this patient lacks other key symptoms of this disorder (eg, hyperarousal, intrusive memories/nightmares/flashbacks, avoidance behaviors). In addition, PTSD is diagnosed only if symptoms last >4 weeks.

Educational objective:
Dissociative amnesia involves an isolated inability to recall important autobiographical information that is

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as in this patient's inability to recall her sister's drowning, but it can also involve more **generalized** amnesia for personal identity and **autobiographical history**. Onset is typically sudden and preceded by overwhelming or intolerable events.

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Educational objective:
Dissociative amnesia involves an isolated inability to recall important autobiographical information that is inconsistent with ordinary forgetfulness. It typically occurs abruptly following an overwhelming, traumatic event.

Behavioral science Psychiatric/Behavioral & Substance Use Disorder Dissociative amnesia

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A 20-year-old college student comes to the office due to fatigue and decreased exercise tolerance. She says, "I used to run 5 miles every day, but for the past month I get out of breath after running 3 miles. I need to keep running so I don't get any fatter than I already am." The patient also reports difficulty concentrating in class, depressed mood, constipation, and abdominal bloating. Her appetite is normal, but she admits to occasionally forcing herself to vomit to prevent weight gain. Physical examination is significant for dry skin, painless bilateral parotid swelling, pharyngeal erythema, and hypoactive bowel sounds. Temperature is 36.2 C (97.2 F), blood pressure is 100/60 mm Hg, pulse is 62/min, and respirations are 16/min. BMI is 17.5 kg/m^2. Which of the following is the most likely diagnosis?

- A. Anorexia nervosa
- B. Body dysmorphic disorder
- C. Bulimia nervosa
- D. Hypothyroidism
- E. Irritable bowel syndrome
- F. Major depressive disorder

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- ✓ A. Anorexia nervosa (67%)
- ✗ B. Body dysmorphic disorder (2%)
- C. Bulimia nervosa (27%)
- D. Hypothyroidism (2%)
- E. Irritable bowel syndrome (0%)
- F. Major depressive disorder (0%)

Incorrect
Correct answer
A

67%
Answered correctly

03 secs
Time Spent

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Explanation

Anorexia nervosa & bulimia nervosa	

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Anorexia nervosa & bulimia nervosa	

Anorexia nervosa	• Significantly low weight
	• Intense fears of gaining weight/distorted body image
	• Subtypes:
	  ◦ Binge/purge
	  ◦ Restricting (dieting, fasting, excessive exercise)

Bulimia nervosa	• Weight within or above normal range • Preoccupation with weight & shape • Binge eating & compensatory behavior (purging, exercise, fasting, laxatives)

This patient's low body weight, distorted body perception, and findings consistent with self-induced vomiting (pharyngeal erythema, parotid hypertrophy) are suggestive of **anorexia nervosa**. Significantly **low body weight** (BMI ≤18.5 kg/m^2 in adults) is a core feature of anorexia nervosa and is accompanied by a **distorted body image** and **fear of weight gain**. There are two subtypes of anorexia. In the restricting subtype, patients fast and exercise excessively but do not purge. In the **binge eating/purging subtype**, patients engage in vomiting and/or use substances (laxatives, enemas, or diuretics) to avoid weight gain.

Findings on physical examination in AN include emaciation, bradycardia, hypotension, hypothermia, hair loss, dry skin, lanugo (fine, downy body hair), and abdominal distension. In the purging subtype, hypokalemia and alkalosis are often present due to repetitive vomiting.

(Choice B) In body dysmorphic disorder, patients display a preoccupation with a perceived or slight bodily defect. Dysmorphic disorder is not diagnosed when body distortion is accompanied by symptoms of an eating disorder (eg, low body weight, fear of weight gain).

(Choice C) Discrete periods of uncontrollable eating, with subsequent compensatory behavior (laxatives,

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excessively but do not purge. In the **binge eating/purging subtype**, patients engage in vomiting and/or use substances (laxatives, enemas, or diuretics) to avoid weight gain.

Findings on physical examination in AN include emaciation, bradycardia, hypotension, hypothermia, hair loss, dry skin, lanugo (fine, downy body hair), and abdominal distension. In the purging subtype, hypokalemia and alkalosis are often present due to repetitive vomiting.

(Choice B) In body dysmorphic disorder, patients display a preoccupation with a perceived or slight bodily defect. Dysmorphic disorder is not diagnosed when body distortion is accompanied by symptoms of an eating disorder (eg, low body weight, fear of weight gain).

(Choice C) Discrete periods of uncontrollable eating, with subsequent compensatory behavior (laxatives, diuretics, vomiting, excessive exercise), occur in bulimia nervosa. However, patients with this condition have a normal or increased body weight (in comparison with AN in which weight is significantly decreased).

(Choice D) Although constipation (hypoactive bowel sounds) and fatigue can also be seen in hypothyroidism, this patient's low weight, fear of gaining weight, distorted body image, and purging make anorexia nervosa more likely.

(Choice E) Irritable bowel syndrome presents with chronic abdominal pain and altered bowel habits (diarrhea, constipation, or mixed-type). Patients often have abdominal bloating. This diagnosis would not explain signs of purging, distorted body image, and significantly low weight.

(Choice F) This patient does not meet the diagnostic criteria for major depressive disorder. Her depressed mood, fatigue, and poor concentration are consistent with the effects of malnutrition.

Educational objective:
Anorexia nervosa is characterized by a distorted body image and fear of weight gain despite significantly low body weight. Patients may restrict their food intake and/or binge and purge. The key in distinguishing anorexia nervosa from bulimia nervosa is abnormally low body weight.

References

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A 32-year-old woman comes to the office due to overwhelming anxiety and stress. The patient is an accountant and has been under increasing job-related pressure for the past 6 weeks due to an upcoming tax deadline. She says, "The worst part is that I get really nervous all of a sudden and then feel shaky, dizzy, and nauseated and start to sweat. It happened while I spoke to my boss a few weeks ago, and I had to excuse myself." The patient is especially worried about having an episode during a work meeting, although she notes that her symptoms have also occurred while she was relaxing at home. She says, "I've stopped going out with my friends because I never know when I'm going to feel this way." The patient has no significant medical history and does not use alcohol or drugs. Blood pressure is 120/70 mm Hg, pulse is 72/min, and respirations are 18/min. Physical examination and laboratory evaluation show no abnormalities. Which of the following is the most likely diagnosis?

- A. Acute stress disorder
- B. Adjustment disorder with anxious mood
- C. Generalized anxiety disorder
- D. Panic disorder
- E. Social anxiety disorder
- F. Specific phobia

Submit

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- A. Acute stress disorder (9%)
- ✗ B. Adjustment disorder with anxious mood (3%)
- C. Generalized anxiety disorder (10%)
- ✓ D. Panic disorder (74%)
- E. Social anxiety disorder (2%)
- F. Specific phobia (0%)

Incorrect
Correct answer
D

74%
Answered correctly

03 secs
Time Spent

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Explanation

Differential diagnosis of DSM-5 anxiety disorders

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Differential diagnosis of DSM-5 anxiety disorders	
Social anxiety disorder (social phobia)	Anxiety restricted to social & performance situations, **fear of scrutiny** & embarrassment
Panic disorder	Recurrent, **unexpected** panic attacks
Specific phobia	Excessive anxiety about a **specific object** or situation (phobic stimulus)
Generalized anxiety disorder	**Chronic multiple worries**, anxiety, tension

This patient's repeated episodes of acute-onset anxiety accompanied by physical symptoms (shaking, dizziness, nausea, sweating) are characteristic of panic disorder. Diagnosis requires **recurrent**, **unexpected panic attacks**, typically reaching a peak within minutes and followed by persistent **concern** about **additional attacks** and/or changes in behavior (eg, patient may restrict activities due to fear of an attack). Characteristic physical symptoms include chest pain, shortness of breath, tachycardia, and gastrointestinal and neurological symptoms. A key feature is that at least some of the attacks are spontaneous with no obvious trigger (eg, when an individual is relaxing or emerging from sleep [ie, nocturnal panic attack]).

Diagnosis of panic disorder requires first ruling out medical and substance-related causes (eg, hyperthyroidism, alcohol withdrawal). Physicians should also differentiate panic disorder from other anxiety and mental disorders with panic attacks as an associated feature. Panic-like symptoms that occur as part of other disorders are typically triggered by, and limited to, specific situations.

(Choice A) Acute stress disorder involves exposure to a traumatic event followed by development of characteristic symptoms (eg, re-experiencing, avoidance, arousal) lasting from 3 days to 1 month.

(Choice B) Although this patient experiences work-related stress, her description of unexpected panic attacks at home makes panic disorder more likely. Adjustment disorder requires that symptoms develop in response to an

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feature is that at least some of the attacks are spontaneous with no obvious trigger (eg, when an individual is relaxing or emerging from sleep [ie, nocturnal panic attack]).

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(Choice A) Acute stress disorder involves exposure to a traumatic event followed by development of characteristic symptoms (eg, re-experiencing, avoidance, arousal) lasting from 3 days to 1 month.

(Choice B) Although this patient experiences work-related stress, her description of unexpected panic attacks at home makes panic disorder more likely. Adjustment disorder requires that symptoms develop in response to an identifiable stressor and do not meet criteria for another mental disorder.

(Choice C) In generalized anxiety disorder, individuals experience chronic, excessive worry for at least 6 months about multiple issues (eg, work, health, finances), which may or may not precipitate panic attacks. In panic disorder, the content of anxious thoughts is more specific (concern about having future panic attacks) and panic attacks are unexpected.

(Choice E) Patients with social anxiety disorder may experience panic attacks in response to social situations (identifiable stimulus) and fear negative evaluation by others rather than the panic symptoms themselves.

(Choice F) Specific phobia is characterized by fear of a specific object or situation, such as flying, heights, or animals. Panic symptoms are triggered by the phobic stimulus and are not spontaneous.

Educational objective:
Panic disorder involves recurrent, unexpected panic attacks characterized by an abrupt surge of fear accompanied by physical and cognitive symptoms. Individuals experience persistent worry about future attacks and typically restrict their activities as a result.

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Exhibit Display

Panic disorder	

Clinical features	• Recurrent & unexpected panic attacks with ≥4 of the following:
	  ◦ Chest pain, palpitations, shortness of breath, choking
	  ◦ Trembling, sweating, nausea, chills
	  ◦ Dizziness, paresthesia
	  ◦ Derealization, depersonalization
	  ◦ Fear of losing control or of dying
	• Worry about additional attacks, avoidance behavior

Treatment	• First-line/maintenance: SSRI/SNRI &/or cognitive-behavioral therapy • Acute distress: benzodiazepines
SNRI = serotonin norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor.	

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(Choice B) Although this patient experiences work-related stress, her description of unexpected panic attacks at home makes panic disorder more likely. Adjustment disorder requires that symptoms develop in response to an

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A 25-year-old graduate student with a history of recurrent ear infections as a child feels anxious and sweats when she is in the examination room with her primary care physician. She recently got a roommate, a nursing student, who leaves her stethoscope on the coffee table after returning from class. The patient sweats and feels her heart start to race whenever she sees the stethoscope. This patient's response to her roommate's stethoscope is an example of which of the following phenomena?

- A. Classical conditioning
- B. Negative punishment
- C. Negative reinforcement
- D. Operant conditioning
- E. Reaction formation
- F. Regression

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- ✓ A. Classical conditioning (78%)
- ✗ B. Negative punishment (0%)
- C. Negative reinforcement (4%)
- D. Operant conditioning (10%)
- E. Reaction formation (4%)
- F. Regression (2%)

Incorrect
Correct answer
A

78%
Answered correctly

03 secs
Time Spent

2023
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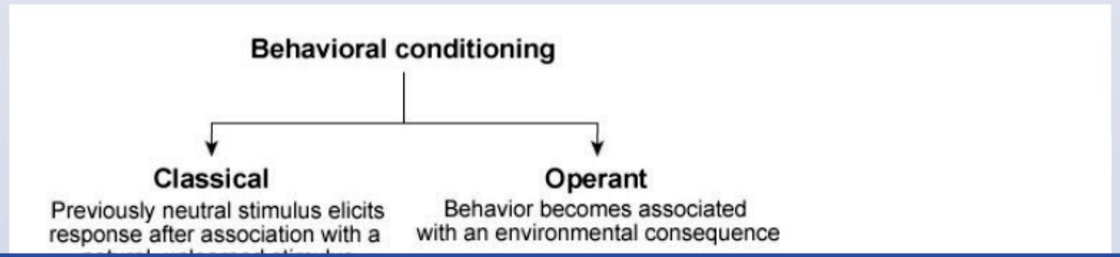
Explanation



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Explanation

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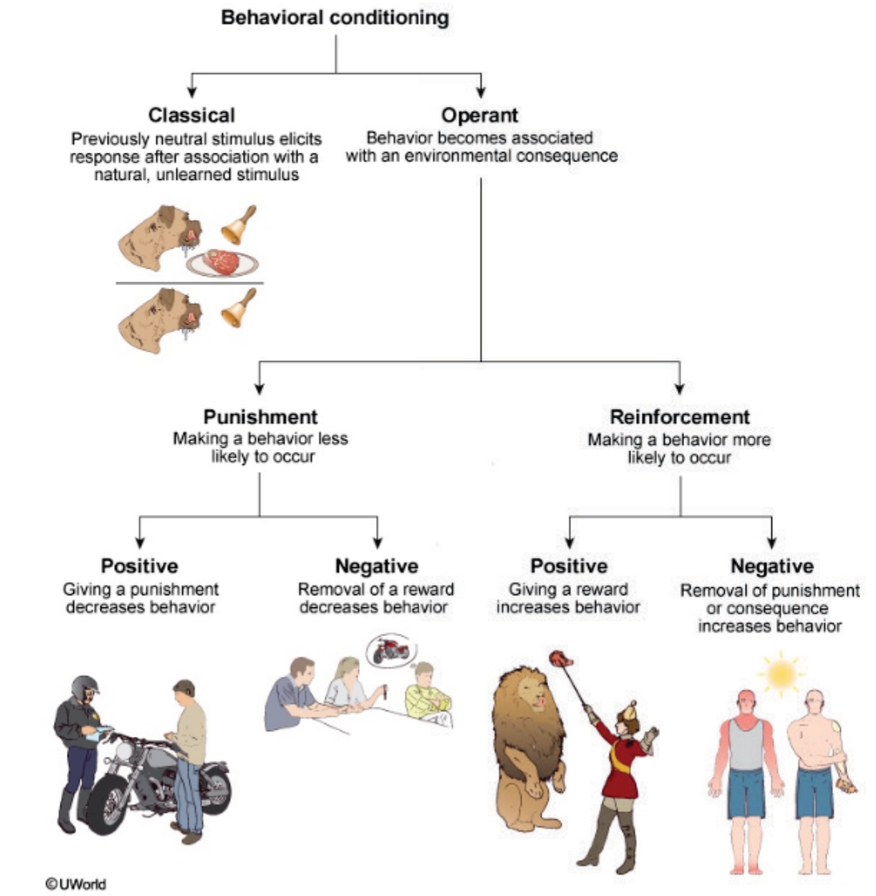

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This patient's response to her roommate's stethoscope is an example of **classical conditioning**. Childhood encounters with her primary care **physician** for ear infections (**unconditioned stimulus**) caused **anxiety** (an automatic reaction called an **unconditioned response**), resulting in sweating at subsequent health care visits. The encounters with her physician are most likely associated with the presence of a **stethoscope** (the **conditioned stimulus**). **Repeated pairing** of the unconditioned stimulus (eg, physician encounter) with the conditioned stimulus (eg, stethoscope) allows the **conditioned stimulus alone** to **elicit** a learned, **conditioned response** (eg, sweating).

Classical conditioning provides one explanation for "white coat hypertension," a condition in which a physician's white coat or examination room acts as a conditioned stimulus, causing anxiety and transient blood pressure elevation during health care visits.

(Choices B, C, and D) In operant conditioning, rewards and punishments are used to reinforce behavior. Negative punishment is the removal of a reward to decrease a behavior (eg, a teenager's driving privileges are taken away after returning home past curfew). With negative reinforcement, desired behavior is strengthened through the removal of a negative outcome (eg, suffering a bad sunburn promotes application of sunscreen to prevent future sunburns).

(Choice E) Reaction formation is the unconscious transformation of an unacceptable impulse or emotion into its opposite (eg, if this patient tells her physician she enjoys clinic visits and acts extremely relaxed during the examination to defend against underlying anxiety).

(Choice F) Regression is a defense mechanism that involves unconsciously reverting to a less mature way of coping with difficulties (eg, if this patient starts sleeping with a stuffed animal to manage anxiety about an upcoming appointment).

Educational objective:
Classical conditioning involves a neutral stimulus being repeatedly paired with a non-neutral stimulus that elicits a

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automatic reaction called an **unconditioned response**), resulting in sweating at subsequent health care visits. The encounters with her physician are most likely associated with the presence of a **stethoscope** (the **conditioned stimulus**). **Repeated pairing** of the unconditioned stimulus (eg, physician encounter) with the conditioned stimulus (eg, stethoscope) allows the **conditioned stimulus alone** to **elicit** a learned, **conditioned response** (eg, sweating).

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Educational objective:
Classical conditioning involves a neutral stimulus being repeatedly paired with a non-neutral stimulus that elicits a reflexive, unconditioned response. Over time, the formerly neutral stimulus is able to evoke a conditioned response by itself in absence of the non-neutral stimulus.

References

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A 38-year-old man comes to the office for evaluation of discomfort in his wrists. He thinks his symptoms may be related to "typing all day, every day." The patient is a software engineer and prefers to work remotely from home to "avoid wasting time talking and interacting with coworkers." He rarely leaves his apartment and spends his spare time on his computer, reading online forums about space exploration and the possibility of alien life. When asked about relationships he says, "I've always liked being on my own." He spent a large portion of his childhood disassembling and rebuilding electronic devices and had few friends. His affect appears constricted and his responses to questions are limited. Which of the following is the most likely personality disorder in this patient?

- A. Antisocial
- B. Avoidant
- C. Obsessive-compulsive
- D. Paranoid
- E. Schizoid
- F. Schizotypal

Submit

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A 38-year-old man comes to the office for evaluation of discomfort in his wrists. He thinks his symptoms may be related to "typing all day, every day." The patient is a software engineer and prefers to work remotely from home to "avoid wasting time talking and interacting with coworkers." He rarely leaves his apartment and spends his spare time on his computer, reading online forums about space exploration and the possibility of alien life. When asked about relationships he says, "I've always liked being on my own." He spent a large portion of his childhood disassembling and rebuilding electronic devices and had few friends. His affect appears constricted and his responses to questions are limited. Which of the following is the most likely personality disorder in this patient?

- A. Antisocial (7%)
- ✗ B. Avoidant (13%)
- C. Obsessive-compulsive (0%)
- D. Paranoid (0%)
- ✓ E. Schizoid (67%)
- F. Schizotypal (10%)

Incorrect
Correct answer
E

67%
Answered correctly

04 secs
Time Spent

2023
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Explanation

DSM-5 personality disorders	
Cluster A	• **Paranoid:** suspicious, distrustful, hypervigilant

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DSM-5 personality disorders	
Cluster A Odd/eccentric	• **Paranoid:** suspicious, distrustful, hypervigilant • **Schizoid:** prefers to be a loner, detached, unemotional • **Schizotypal:** unusual thoughts, perceptions & behavior
Cluster B Dramatic/erratic	• **Antisocial:** disregard & violation of the rights of others • **Borderline:** chaotic relationships, abandonment fears, labile mood, impulsivity, inner emptiness, self-harm • **Histrionic:** superficial, theatrical, attention-seeking • **Narcissistic:** grandiosity, lack of empathy
Cluster C Anxious/fearful	• **Avoidant:** avoidance due to fears of criticism & rejection • **Dependent:** submissive, clingy, needs to be taken care of • **Obsessive-compulsive:** rigid, controlling, perfectionistic

This patient's preference for working on his own, disinterest in relationships, and constricted range of affect are suggestive of **schizoid personality disorder**. Individuals with this disorder have a persistent pattern of **social detachment**, preference for **solitary activities**, and **limited emotional expressivity** when interacting with others. They have few close relationships, usually only with family members, and show little interest in intimacy or sexual experiences. Individuals with schizoid personality disorder may have occupational difficulties as they can appear indifferent to feedback and tend to prefer working alone.

(Choice A) Antisocial personality disorder involves a pattern of violating the rights of others and engaging in unlawful behaviors (eg, physical aggression, property destruction) without feeling remorseful for transgressions.

(Choice B) Individuals with avoidant personality disorder also have limited social interactions, but they strongly desire relationships and social acceptance. They tend to avoid socialization due to fear of rejection and feelings of

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This patient's preference for working on his own, disinterest in relationships, and constricted range of affect are suggestive of **schizoid personality disorder**. Individuals with this disorder have a persistent pattern of **social detachment**, preference for **solitary activities**, and **limited emotional expressivity** when interacting with others. They have few close relationships, usually only with family members, and show little interest in intimacy or sexual experiences. Individuals with schizoid personality disorder may have occupational difficulties as they can appear indifferent to feedback and tend to prefer working alone.

(Choice A) Antisocial personality disorder involves a pattern of violating the rights of others and engaging in unlawful behaviors (eg, physical aggression, property destruction) without feeling remorseful for transgressions.

(Choice B) Individuals with avoidant personality disorder also have limited social interactions, but they strongly desire relationships and social acceptance. They tend to avoid socialization due to fear of rejection and feelings of inadequacy.

(Choice C) Obsessive-compulsive personality disorder involves a pattern of fixation with orderliness, control, and perfectionism resulting in interpersonal inflexibility and moral rigidity.

(Choice D) Individuals with paranoid personality disorder also have few relationships and avoid social interactions, but this stems from suspiciousness and distrust of others' intentions rather than disinterest.

(Choice F) Although individuals with schizoid personality disorder and schizotypal personality disorder lack close friends and can be socially awkward, those with schizotypal personality disorder have a long-standing pattern of eccentric behaviors, perceptual disturbances, and magical thinking (eg, clairvoyance, telepathy).

Educational objective:
Schizoid personality disorder consists of a persistent pattern of social detachment, preference for solitary activities, and constricted range of affect in social interactions.

References

- Review of pharmacologic treatment in cluster A personality disorders.

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A 69-year-old woman comes to the office due to memory concerns. The patient first began having difficulties with her memory a year ago, and her symptoms have steadily worsened. She often forgets the content of conversations she has with her son and frequently walks to another room, only to forget what she went there to do. The patient lives alone and has no difficulty cooking, cleaning, or otherwise caring for herself. She manages her own finances. Medical history is significant for hypertension, hyperlipidemia, and type 2 diabetes mellitus. Temperature is 36.9 C (98.4 F), blood pressure is 132/83 mm Hg, pulse is 72/min, and respirations are 14/min. The patient is alert and oriented. Neurological examination reveals no focal deficits. She scores 22/30 on the Montreal Cognitive Assessment. Which of the following is the most likely diagnosis?

- A. Alzheimer disease
- B. Depression-related cognitive impairment
- C. Frontotemporal dementia
- D. Mild cognitive impairment
- E. Normal aging
- F. Vascular dementia

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- A. Alzheimer disease (19%)
- ✕ B. Depression-related cognitive impairment (0%)
- C. Frontotemporal dementia (0%)
- ✓ D. Mild cognitive impairment (41%)
- E. Normal aging (28%)
- F. Vascular dementia (9%)

Incorrect
Correct answer
D

41%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

Cognitive impairment in elderly patients	
	Slight decrease in fluid intelligence (ability to process new

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Cognitive impairment in elderly patients	
Normal aging	• Slight decrease in fluid intelligence (ability to process new information quickly) • **Normal functioning** in all activities of daily living
Mild neurocognitive disorder (mild cognitive impairment)	• Mild decline in ≥1 cognitive domains • Normal functioning in all activities of daily living with compensation
Major neurocognitive disorder (dementia)	• Significant decline in ≥1 cognitive domains • **Irreversible** global cognitive impairment • Marked functional impairment • Chronic & progressive, months to years
Major depression	• **Reversible** mild-moderate cognitive impairment • Features of **depression** (mood, interest, energy) • Episodic, weeks to months

This patient's **mild memory impairment**, abnormal Montreal Cognitive Assessment score (<26/30) and ability to **function independently** are consistent with **mild cognitive impairment**, also known as mild neurocognitive disorder. MCI is diagnosed when there is objective evidence of cognitive deficits that do not interfere with activities of daily living (ADLs) (eg, bathing, preparing meals, managing finances). In contrast, a diagnosis of **dementia**, also known as major neurocognitive disorder, requires the presence of **progressive cognitive deficits** that **impair ADLs**.

MCI is common in older age, with >10% of patients age >70 meeting criteria. Patients with subjective memory concerns should be evaluated objectively through cognitive testing because certain memory issues (eg, difficulty

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This patient's **mild memory impairment**, abnormal Montreal Cognitive Assessment score (<26/30) and ability to **function independently** are consistent with **mild cognitive impairment**, also known as mild neurocognitive disorder. MCI is diagnosed when there is objective evidence of cognitive deficits that do not interfere with activities of daily living (ADLs) (eg, bathing, preparing meals, managing finances). In contrast, a diagnosis of **dementia**, also known as major neurocognitive disorder, requires the presence of **progressive cognitive deficits** that **impair ADLs**.

MCI is common in older age, with >10% of patients age >70 meeting criteria. Patients with subjective memory concerns should be evaluated objectively through cognitive testing because certain memory issues (eg, difficulty remembering names, decreased processing speed) may represent normative age-related cognitive changes. When evaluating for MCI, it is important to rule out reversible causes of cognitive impairment such as depression-related cognitive impairment, hypothyroidism, vitamin B_{12} deficiency, impaired sleep (eg, obstructive sleep apnea), and adverse effects of pharmacotherapy (eg, benzodiazepines).

(Choices A, C, and F) This patient does not meet criteria for dementia (ie, progressive cognitive impairment that impairs ADLs). Alzheimer disease presents with early and prominent memory impairment. Frontotemporal dementia presents with personality and behavioral changes. Vascular dementia is characterized by focal neurological deficits and evidence of cerebrovascular disease on imaging.

(Choice B) Although depression may be associated with reversible cognitive impairment, this patient does not meet criteria for major depressive disorder.

(Choice E) Although mild memory issues may be a part of normal aging (eg, difficulty remembering names, decreased processing speed), this patient's objective evidence of cognitive impairment on formal cognitive testing is not normal and requires further evaluation.

Educational objective:
Mild cognitive impairment is diagnosed when cognitive decline is present but activities of daily living (eg, bathing, preparing meals, managing finances) are preserved. In contrast, dementia is diagnosed when cognitive decline

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of daily living (ADLs) (eg, bathing, preparing meals, managing finances). In contrast, a diagnosis of **dementia**, also known as major neurocognitive disorder, requires the presence of **progressive cognitive deficits** that **impair ADLs**.

MCI is common in older age, with >10% of patients age >70 meeting criteria. Patients with subjective memory concerns should be evaluated objectively through cognitive testing because certain memory issues (eg, difficulty remembering names, decreased processing speed) may represent normative age-related cognitive changes. When evaluating for MCI, it is important to rule out reversible causes of cognitive impairment such as depression-related cognitive impairment, hypothyroidism, vitamin B_{12} deficiency, impaired sleep (eg, obstructive sleep apnea), and adverse effects of pharmacotherapy (eg, benzodiazepines).

(Choices A, C, and F) This patient does not meet criteria for dementia (ie, progressive cognitive impairment that impairs ADLs). Alzheimer disease presents with early and prominent memory impairment. Frontotemporal dementia presents with personality and behavioral changes. Vascular dementia is characterized by focal neurological deficits and evidence of cerebrovascular disease on imaging.

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Educational objective:
Mild cognitive impairment is diagnosed when cognitive decline is present but activities of daily living (eg, bathing, preparing meals, managing finances) are preserved. In contrast, dementia is diagnosed when cognitive decline interferes with activities of daily living.

Behavioral science | Psychiatric/Behavioral & Substance Use Disorder | Mild cognitive impairment

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Exhibit Display

Major depressive disorder	

Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure):
	  ◦ Depressed mood
	  ◦ Loss of interest or pleasure
	  ◦ Change in appetite or weight
	  ◦ Insomnia or hypersomnia
	  ◦ Psychomotor retardation or agitation
	  ◦ Low energy
	  ◦ Poor concentration or indecisiveness
	  ◦ Thoughts of worthlessness or inappropriate guilt
	  ◦ Recurrent thoughts of death or suicide
	• No history of mania or hypomania
	• Not due to substances or another medical condition

New | Existing My Notebook

Behavioral science Psychiatric/Behavioral & Substance Use Disorder Mild cognitive impairment

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A 27-year-old woman is brought to the emergency department by her employer due to increasingly paranoid and disorganized behavior over the past year. The patient works as a housekeeper and has had progressive difficulty performing her work responsibilities. She has become increasingly secretive over the past 6 months and recently started talking in a whisper because she believes that listening devices are planted in the walls. Over the past month, she started hiding food and personal possessions in closets and under beds. The patient does not use alcohol or illicit drugs. Vital signs are stable, and physical examination is unremarkable. During the interview, she changes topics frequently and rambles about voices harassing her. Which of the following additional mental status findings is most likely in this patient?

- A. Decreased facial expressiveness
- B. Euphoric mood
- C. Fluctuating level of consciousness
- D. Olfactory hallucinations
- E. Pressured speech
- F. Tactile hallucinations

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- ✓ A. Decreased facial expressiveness (54%)
- ✗ B. Euphoric mood (2%)
- C. Fluctuating level of consciousness (2%)
- D. Olfactory hallucinations (7%)
- E. Pressured speech (27%)
- F. Tactile hallucinations (5%)

Incorrect
Correct answer
A

54%
Answered correctly

04 secs
Time Spent

2023
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Explanation

Schizophrenia	
	>2 of the following (at least 1 symptom from 1-3)

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Schizophrenia	
Diagnosis	• ≥2 of the following (at least 1 symptom from 1-3) 1. Delusions 2. Hallucinations 3. Disorganized speech 4. Disorganized or catatonic behavior 5. Negative symptoms (eg, apathy, flat affect) • Continuous impairment ≥6 months • Significant functional decline
Treatment	• Antipsychotic medication • Adjunctive psychosocial interventions (eg, social skills training, cognitive-behavioral therapy, family intervention)

This patient's paranoid delusions, disorganized speech and behavior, auditory hallucinations, and 1-year history of functional decline are consistent with **schizophrenia**. Symptom domains in schizophrenia include positive symptoms (eg, delusions, hallucinations, disorganization) and **negative symptoms** (eg, flat affect, apathy, poverty of speech, social withdrawal). On mental status examination, **flat affect** is manifested by a **lack of facial expression** and a **monotone voice**, typically accompanied by poor eye contact. Negative symptoms are less responsive to antipsychotic medication and typically persist between acute psychotic episodes.

Although patients with schizophrenia commonly have cognitive impairments (eg, attention, processing speed, executive functioning), they are typically oriented and do not show a fluctuating level of consciousness that is associated with delirium **(Choice C)**.

(Choices B and E) Euphoric mood and rapid, pressured speech are characteristic findings of an acute manic episode in bipolar disorder. Patients with schizophrenia may have speech that is disorganized (eg, tangential

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	cognitive-behavioral therapy, family intervention)

This patient's paranoid delusions, disorganized speech and behavior, auditory hallucinations, and 1-year history of functional decline are consistent with **schizophrenia**. Symptom domains in schizophrenia include positive symptoms (eg, delusions, hallucinations, disorganization) and **negative symptoms** (eg, flat affect, apathy, poverty of speech, social withdrawal). On mental status examination, **flat affect** is manifested by a **lack of facial expression** and a **monotone voice**, typically accompanied by poor eye contact. Negative symptoms are less responsive to antipsychotic medication and typically persist between acute psychotic episodes.

Although patients with schizophrenia commonly have cognitive impairments (eg, attention, processing speed, executive functioning), they are typically oriented and do not show a fluctuating level of consciousness that is associated with delirium **(Choice C)**.

(Choices B and E) Euphoric mood and rapid, pressured speech are characteristic findings of an acute manic episode in bipolar disorder. Patients with schizophrenia may have speech that is disorganized (eg, tangential speech, derailment), but it typically is not pressured.

(Choices D and F) Although olfactory and tactile hallucinations can occur in schizophrenia, they are uncommon and more likely to be associated with substance use or neurological disorders. Auditory is the most common type of hallucination in schizophrenia.

Educational objective:
In addition to positive psychotic symptoms (eg, delusions, hallucinations, disorganization), patients with schizophrenia frequently exhibit negative symptoms such as flat affect (ie, lack of facial expression). Negative symptoms typically persist between acute psychotic episodes and are more resistant to treatment.

References

- Emotional face processing and flat affect in schizophrenia: functional and structural neural correlates.
- The current conceptualization of negative symptoms in schizophrenia.

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A 62-year-old woman comes to the office for follow-up of worsening hypertension. The patient admits to not taking her antihypertension medication as prescribed. She says she feels fine and adds, "I always listen to my bodily rhythms when deciding whether to take medication on a particular day." The patient explains that her crystal jewelry has healing powers, and she maintains an online forum about the health benefits of crystals. The patient does not trust most people and believes that she can predict the weather based on the number of birds in her yard. She lives alone, has few friends, and is unemployed. On examination, the patient makes limited eye contact and appears mildly anxious. She has no auditory hallucinations, and no specific delusions are elicited. Which of the following is the most likely explanation for this clinical presentation?

- A. Avoidant personality disorder
- B. Borderline personality disorder
- C. Obsessive-compulsive personality disorder
- D. Paranoid personality disorder
- E. Schizoid personality disorder
- F. Schizophrenia
- G. Schizotypal personality disorder

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- A. Avoidant personality disorder (3%)
- ✗ B. Borderline personality disorder (2%)
- C. Obsessive-compulsive personality disorder (0%)
- D. Paranoid personality disorder (5%)
- E. Schizoid personality disorder (15%)
- F. Schizophrenia (0%)
- ✓ G. Schizotypal personality disorder (71%)

Incorrect
Correct answer
G

71%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

DSM-5 personality disorders

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DSM-5 personality disorders	
Cluster A Odd/eccentric	• **Paranoid:** suspicious, distrustful, hypervigilant • **Schizoid:** prefers to be a loner, detached, unemotional • **Schizotypal:** unusual thoughts, perceptions & behavior
Cluster B Dramatic/erratic	• **Antisocial:** disregard & violation of the rights of others • **Borderline:** chaotic relationships, abandonment fears, labile mood, impulsivity, inner emptiness, self-harm • **Histrionic:** superficial, theatrical, attention-seeking • **Narcissistic:** grandiosity, lack of empathy
Cluster C Anxious/fearful	• **Avoidant:** avoidance due to fears of criticism & rejection • **Dependent:** submissive, clingy, needs to be taken care of • **Obsessive-compulsive:** rigid, controlling, perfectionistic

This patient's eccentric behavior, odd thoughts, perceptual distortions (eg, "bodily rhythms"), and social anxiety are consistent with **schizotypal personality disorder**. Patients with this disorder typically exhibit **magical thinking** (eg, superstitiousness, clairvoyance) and odd **perceptual disturbances** that are subthreshold for a psychotic disorder. They do not experience the persistent, fixed delusions or frank hallucinations seen in schizophrenia **(Choice F)**. Individuals with schizotypal personality disorder rarely sustain close interpersonal relationships due to excessive social anxiety that does not decrease with familiarity.

(Choice A) Social anxiety is common in patients with both schizotypal and avoidant personality disorders. However, individuals with avoidant personality disorder desire relationships but fear rejection and do not exhibit the eccentric behaviors of schizotypal personality disorder.

(Choice B) Borderline personality disorder is characterized by unstable relationships, impulsivity, mood lability, and self-harm.

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Anxious/fearful	• **Dependent:** submissive, clingy, needs to be taken care of • **Obsessive-compulsive:** rigid, controlling, perfectionistic

This patient's eccentric behavior, odd thoughts, perceptual distortions (eg, "bodily rhythms"), and social anxiety are consistent with **schizotypal personality disorder**. Patients with this disorder typically exhibit **magical thinking** (eg, superstitiousness, clairvoyance) and odd **perceptual disturbances** that are subthreshold for a psychotic disorder. They do not experience the persistent, fixed delusions or frank hallucinations seen in schizophrenia **(Choice F)**. Individuals with schizotypal personality disorder rarely sustain close interpersonal relationships due to excessive social anxiety that does not decrease with familiarity.

(Choice A) Social anxiety is common in patients with both schizotypal and avoidant personality disorders. However, individuals with avoidant personality disorder desire relationships but fear rejection and do not exhibit the eccentric behaviors of schizotypal personality disorder.

(Choice B) Borderline personality disorder is characterized by unstable relationships, impulsivity, mood lability, and self-harm.

(Choice C) Obsessive-compulsive personality disorder is a lifelong pattern of preoccupation with orderliness, perfectionism, and control.

(Choices D and E) Although individuals with paranoid and schizoid personality disorders also have difficulty sustaining trusting relationships, they do not exhibit the overt eccentricity or perceptual distortions seen in schizotypal personality disorder. Patients with paranoid personality disorder exhibit a pattern of pervasive distrust and suspicion; those with schizoid personality disorder are socially detached and tend to prefer solitary activities.

Educational objective:
Schizotypal personality disorder is characterized by a long-standing pattern of eccentric behavior, odd beliefs, perceptual distortions, and social anxiety despite familiarity.

References

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A 25-year-old man is brought to the emergency department by ambulance after being found sitting in the street drinking his own urine. The patient's mother says that a year ago he expressed the belief that he was being watched by an unidentified government agency and subsequently broke up with his girlfriend, quit his job, and disconnected his phone. The patient's mother has noticed that he no longer seems to care about activities that used to interest him, and last month she found out that he had moved into the family garden shed with his dog. On examination, the patient is malodorous, disheveled, and laughs for no apparent reason. He later becomes angry and refuses to sit in a chair for the interview. The patient switches among unrelated topics and when asked where he lives says, "in the holy buffet of diplomacy." Temperature is 36.7 C (98 F), blood pressure is 122/79 mm Hg, and pulse is 80/min. Physical examination and laboratory evaluation, including urine toxicology, are unremarkable. Which of the following is the most likely diagnosis in this patient?

- A. Bipolar I disorder
- B. Brief psychotic disorder
- C. Major depression with psychotic features
- D. Psychotic disorder due to a general medical condition
- E. Schizoaffective disorder
- F. Schizophrenia
- G. Schizophreniform disorder

Submit

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- A. Bipolar I disorder (3%)
- B. Brief psychotic disorder (0%)
- ✗ C. Major depression with psychotic features (3%)
- D. Psychotic disorder due to a general medical condition (0%)
- E. Schizoaffective disorder (7%)
- ✓ F. Schizophrenia (81%)
- G. Schizophreniform disorder (2%)

Incorrect
Correct answer
F

81%
Answered correctly

05 secs
Time Spent

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Explanation

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Schizophrenia	
Diagnosis	• ≥2 of the following (at least 1 symptom from 1-3) 1. Delusions 2. Hallucinations 3. Disorganized speech 4. Disorganized or catatonic behavior 5. Negative symptoms (eg, apathy, flat affect) • Continuous impairment ≥6 months • Significant functional decline
Treatment	• Antipsychotic medication • Adjunctive psychosocial interventions (eg, social skills training, cognitive-behavioral therapy, family intervention)

This patient's **delusions**, **disorganized speech** (eg, loosening of associations, nonsensical words), **grossly disorganized behavior** (eg, unpredictable agitation, bizarre behaviors, inappropriate affect), and functional decline lasting ≥6 months are consistent with **schizophrenia**. Other symptoms include **hallucinations** and **negative symptoms** (eg, affective flattening, apathy, alogia [poverty of speech], anhedonia, asociality).

Schizophrenia has an overall international prevalence of almost 1% and is slightly more prevalent among men. Schizophrenia typically presents in the early 20s in men and the late 20s in women. The majority of patients with schizophrenia follow a fluctuating course in which symptoms peak (as seen in this patient) and then diminish, with less severe residual symptoms (eg, disorganization, mild negative symptoms, mild hallucinations) at baseline. The treatment of choice for schizophrenia is antipsychotic medication.

(Choices A and C) In bipolar disorder or major depressive disorder (MDD) with psychotic features, psychotic symptoms occur exclusively during a major depressive or manic episode. This patient's apathy and anhedonia are

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(Choices A and C) In bipolar disorder or major depressive disorder (MDD) with psychotic features, psychotic symptoms occur exclusively during a major depressive or manic episode. This patient's apathy and anhedonia are negative symptoms of schizophrenia. Although anhedonia is also seen in MDD, this patient does not have other depressive symptoms required to diagnose MDD.

(Choices B and G) Brief psychotic disorder is characterized by acute onset of psychotic symptoms lasting ≥1 day but <1 month, with full return to premorbid level of functioning. Schizophreniform disorder is distinguished from schizophrenia by a symptom duration of >1 month and <6 months. Because this patient's symptoms have lasted ≥6 months, he meets the criteria for schizophrenia.

(Choice D) Although it is important to definitively rule out medical causes of psychosis, this patient's normal vital signs and unremarkable physical examination and laboratory evaluation make a primary psychiatric disorder more likely.

(Choice E) Schizoaffective disorder requires that the patient meet the criteria for a major depressive or manic episode concurrent with active-phase symptoms of schizophrenia. The diagnosis also requires that delusions or hallucinations occur in the absence of mood symptoms for ≥2 weeks at some point during the illness.

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(Choices B and G) Brief psychotic disorder is characterized by acute onset of psychotic symptoms lasting ≥1 day but <1 month, with full return to premorbid level of functioning. Schizophreniform disorder is distinguished from schizophrenia by a symptom duration of >1 month and <6 months. Because this patient's symptoms have lasted ≥6 months, he meets the criteria for schizophrenia.

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(Choice E) Schizoaffective disorder requires that the patient meet the criteria for a major depressive or manic episode concurrent with active-phase symptoms of schizophrenia. The diagnosis also requires that delusions or hallucinations occur in the absence of mood symptoms for ≥2 weeks at some point during the illness.

Educational objective:
The diagnosis of schizophrenia requires ≥2 of the following 5 symptoms: delusions, hallucinations, disorganized speech, grossly disorganized behavior, and negative symptoms. The total impairment duration must be ≥6 months.

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Treatment	• Antipsychotic medication • Adjunctive psychosocial interventions (eg, social skills training,

Exhibit Display

Major depressive disorder	

Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure):
	  ◦ Depressed mood
	  ◦ Loss of interest or pleasure
	  ◦ Change in appetite or weight
	  ◦ Insomnia or hypersomnia
	  ◦ Psychomotor retardation or agitation
	  ◦ Low energy
	  ◦ Poor concentration or indecisiveness
	  ◦ Thoughts of worthlessness or inappropriate guilt
	  ◦ Recurrent thoughts of death or suicide
	• No history of mania or hypomania
	• Not due to substances or another medical condition

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(Choice E) Schizoaffective disorder requires that the patient meet the criteria for a major depressive or manic

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An 11-month-old boy is brought to the office by his mother for a well-child visit. The mother reports that he has been crying and screaming when other people approach him. She is concerned that it has been occurring for the past few months and that it seems to be worsening. She says, "He used to love being held by everyone but now wants to be with only me. He won't even let his grandma hold him anymore." The patient is crawling and can stand only with assistance. He babbles but does not say any clear words and uses hand gestures to communicate. Growth curves are tracking adequately. On physical examination, the patient clings to his mother and begins crying, turning his head away from the physician when he attempts to interact with him. Which of the following is the most likely explanation for this patient's behavior?

- A. Adjustment disorder with anxiety
- B. Autism spectrum disorder
- C. Normal development
- D. Reactive attachment disorder
- E. Separation anxiety disorder

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An 11-month-old boy is brought to the office by his mother for a well-child visit. The mother reports that he has been crying and screaming when other people approach him. She is concerned that it has been occurring for the past few months and that it seems to be worsening. She says, "He used to love being held by everyone but now wants to be with only me. He won't even let his grandma hold him anymore." The patient is crawling and can stand only with assistance. He babbles but does not say any clear words and uses hand gestures to communicate. Growth curves are tracking adequately. On physical examination, the patient clings to his mother and begins crying, turning his head away from the physician when he attempts to interact with him. Which of the following is the most likely explanation for this patient's behavior?

- A. Adjustment disorder with anxiety (0%)
- B. Autism spectrum disorder (4%)
- ✓ C. Normal development (72%)
- D. Reactive attachment disorder (7%)
- E. Separation anxiety disorder (15%)

Correct

72% Answered correctly

26 secs Time Spent

2023 Version

Explanation

This patient's distress at interacting with unfamiliar people is typical of **stranger anxiety**, a normal part of development that begins around age **6 months**. It is characterized by distress (expressed by **crying**, **screaming**, clinging) when **unfamiliar people** approach and occurs even in the presence of the caregiver. The development of stranger anxiety at this age indicates that the infant has made a specific attachment to the primary caregiver

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Explanation

This patient's distress at interacting with unfamiliar people is typical of **stranger anxiety**, a normal part of development that begins around age **6 months**. It is characterized by distress (expressed by **crying**, **screaming**, clinging) when **unfamiliar people** approach and occurs even in the presence of the caregiver. The development of stranger anxiety at this age indicates that the infant has made a specific attachment to the primary caregiver (mother) and is able to distinguish her from a strange or less familiar individual.

Stranger anxiety typically peaks around age 9 months and resolves on its own by 2 years of age. Adjustment disorders are diagnosed when the response to a stressor is greater than would be expected and associated with impairment **(Choice A)**. Stranger anxiety is a **normal** and expected developmental milestone.

(Choice B) It is normal for an 11-month-old infant to avoid contact with a stranger if distressed. If an infant persistently shows poor eye contact, lacks joint attention, and has no response to being called by name at age 12-15 months, these may represent early signs of an autism spectrum disorder and should be evaluated further.

(Choice D) Reactive attachment disorder occurs in children exposed to neglect and abuse and is characterized by decreased emotional responsiveness and lack of response to adult comfort. This infant appears to be appropriately attached to his mother.

(Choice E) Separation anxiety disorder is diagnosed in children who exhibit persistent and disabling anxiety about losing attachment figures at separation. It usually develops in childhood rather than infancy, typically in association with starting school. Stranger anxiety, in contrast to separation anxiety, occurs even when the caregiver is present.

Educational objective:
Stranger anxiety, which presents as crying or screaming when unfamiliar people approach, is a normal and expected part of childhood development. It typically begins around age 6 months and resolves by 2 years of age.

Behavioral science	Psychiatric/Behavioral & Substance Use Disorder	Normal child development
Subject	System	Topic

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A 48-year-old man is hospitalized due to severe depression. The patient became increasingly depressed over the past month and stopped going to work last week because he was unmotivated to get out of bed. He sleeps up to 16 hours a day, has no energy, and has gained 4.54 kg (10 lb) over the past month. The patient has had daily thoughts of suicide for the past week but says he will not act on them because of his children. He also describes several weeklong periods when he had extra energy and took on many projects at once. During these times, the patient rarely slept and believed he had superhuman powers to control other people's minds with his eyes. Physical and laboratory evaluations are unremarkable. Which of the following medications would be most appropriate for long-term management of this patient?

- A. Bupropion
- B. Clozapine
- C. Diazepam
- D. Duloxetine
- E. Haloperidol
- F. Lithium
- G. Sertraline

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- A. Bupropion (2%)
- ✗ B. Clozapine (4%)
- C. Diazepam (0%)
- D. Duloxetine (2%)
- E. Haloperidol (3%)
- ✓ F. Lithium (80%)
- G. Sertraline (5%)

Incorrect
Correct answer
F

80%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

This patient's current symptoms and past psychiatric history are consistent with **bipolar I disorder**. He is currently

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This patient's current symptoms and past psychiatric history are consistent with **bipolar I disorder**. He is currently experiencing a **major depressive episode** (ie, ≥2 weeks of depressed mood, low energy, increased appetite, hypersomnia, and suicidal ideation), and his history is consistent with past **manic episodes** characterized by weeklong periods of increased energy, hyperactivity, decreased need for sleep, and grandiose delusions.

The goal of long-term treatment of bipolar disorder is to delay or prevent recurrence of manic and depressive episodes. Treatment options for **bipolar maintenance** include the mood stabilizers **lithium, valproate**, and **lamotrigine** or second-generation antipsychotics (eg, **quetiapine, risperidone**). Maintenance treatment with lithium has also been shown to reduce the risk of suicidal ideation, making it a good choice for this patient.

(Choices A, D, and G) Bupropion (a norepinephrine-dopamine reuptake inhibitor), duloxetine (a selective serotonin and norepinephrine reuptake inhibitor), and sertraline (a selective serotonin reuptake inhibitor) are antidepressants that would be appropriate in unipolar major depression or as an adjunct in bipolar depression if symptoms persist despite an adequate dose of a mood stabilizer. Antidepressant monotherapy should be avoided in patients with bipolar disorder due to the risk of inducing mania.

(Choice B) Clozapine is a second-generation antipsychotic that is used in treatment-resistant cases of schizophrenia or bipolar disorder but is not a first-line treatment because of the risk of life-threatening agranulocytosis.

(Choice C) Benzodiazepines (eg, diazepam) are not indicated for bipolar maintenance treatment and are associated with the risk of abuse and dependence.

(Choice E) Haloperidol is a first-generation antipsychotic that may be used to treat acute mania. However, it is not used for long-term bipolar maintenance due to its adverse effect profile (eg, dyskinesia).

Educational objective:
The goal of bipolar maintenance treatment is to delay or prevent recurrent manic and depressive episodes. Lithium is first-line treatment and has the added benefit of reducing the risk of suicide.

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A 30-year-old woman comes to the office due to chronic anxiety and tension. The patient says she worries constantly about multiple issues involving her work, finances, and family. At work, she has difficulty concentrating as she repeatedly calls to check on the whereabouts and safety of her husband and children. The patient also describes frequent tension headaches, back pain, and fatigue. She does not feel depressed and says that her sleep and appetite are normal. Laboratory studies, including thyroid function tests, are within normal limits. In addition to a recommendation of psychotherapy, pharmacotherapy with buspirone is initiated. This medication is associated with which of the following properties?

- A. Antiseizure properties
- B. Efficacy in panic disorder
- C. Euphoric effects
- D. Muscle relaxant properties
- E. No risk of dependence
- F. Rapid onset of action

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A 30-year-old woman comes to the office due to chronic anxiety and tension. The patient says she worries constantly about multiple issues involving her work, finances, and family. At work, she has difficulty concentrating as she repeatedly calls to check on the whereabouts and safety of her husband and children. The patient also describes frequent tension headaches, back pain, and fatigue. She does not feel depressed and says that her sleep and appetite are normal. Laboratory studies, including thyroid function tests, are within normal limits. In addition to a recommendation of psychotherapy, pharmacotherapy with buspirone is initiated. This medication is associated with which of the following properties?

- A. Antiseizure properties (3%)
- ✗ B. Efficacy in panic disorder (17%)
- C. Euphoric effects (5%)
- D. Muscle relaxant properties (12%)
- ✓ E. No risk of dependence (53%)
- F. Rapid onset of action (7%)

Incorrect
Correct answer
E

53%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

This patient's chronic anxiety about multiple issues and associated symptoms of muscle tension, impaired concentration, and fatigue are consistent with a diagnosis of **generalized anxiety disorder** (GAD). **Buspirone** is a **nonbenzodiazepine anxiolytic** used in the treatment of GAD that has **no risk of dependence** in contrast to the

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E

Answered correctly

Time Spent

Version

Explanation

This patient's chronic anxiety about multiple issues and associated symptoms of muscle tension, impaired concentration, and fatigue are consistent with a diagnosis of **generalized anxiety disorder** (GAD). **Buspirone** is a **nonbenzodiazepine anxiolytic** used in the treatment of GAD that has **no risk of dependence** in contrast to the substantial risk associated with benzodiazepines.

(Choices A, B, and D) Buspirone acts as a partial agonist of the $5HT_{1A}$ receptor. In contrast to benzodiazepines, which act at GABA-A receptors, buspirone primarily affects serotonin and has no muscle relaxant or anticonvulsant properties. Buspirone is also not effective in treating panic disorder.

(Choice C) Buspirone has fewer sedative and hypnotic effects compared to benzodiazepines and does not cause euphoria.

(Choice F) Buspirone is not useful in the acute setting because it requires up to 2 weeks for the anxiolytic effect to begin.

Educational objective:
Buspirone is a nonbenzodiazepine anxiolytic used to treat generalized anxiety disorder. It has a slow onset of action, lacks muscle relaxant or anticonvulsant properties, and carries no risk of dependence.

References

- Buspirone: what is it all about?
- Buspirone: back to the future.

Pharmacology	Psychiatric/Behavioral & Substance Use Disorder	Generalized anxiety disorder
Subject	System	Topic

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A 38-year-old woman comes to the office due to breast tenderness and absence of menstrual periods over the last 3 months. The patient has a history of schizophrenia and familial hypercholesterolemia. Medications include risperidone, which has led to significant improvement in psychotic symptoms, and atorvastatin. BMI is 26 kg/m^2, down from 30 kg/m^2 6 months ago after following a strict dietary plan. Basic serum chemistry panel and thyroid function tests are normal, and urine pregnancy test is negative. Which of the following is the most likely explanation for this patient's amenorrhea?

- A. 21-hydroxylase deficiency
- B. Asherman syndrome
- C. Drug-induced amenorrhea
- D. Polycystic ovary syndrome
- E. Primary ovarian insufficiency
- F. Weight loss

Submit

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- A. 21-hydroxylase deficiency (0%)
- ✗ B. Asherman syndrome (0%)
- ✓ C. Drug-induced amenorrhea (81%)
- D. Polycystic ovary syndrome (1%)
- E. Primary ovarian insufficiency (1%)
- F. Weight loss (13%)

Incorrect
Correct answer
C

81%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

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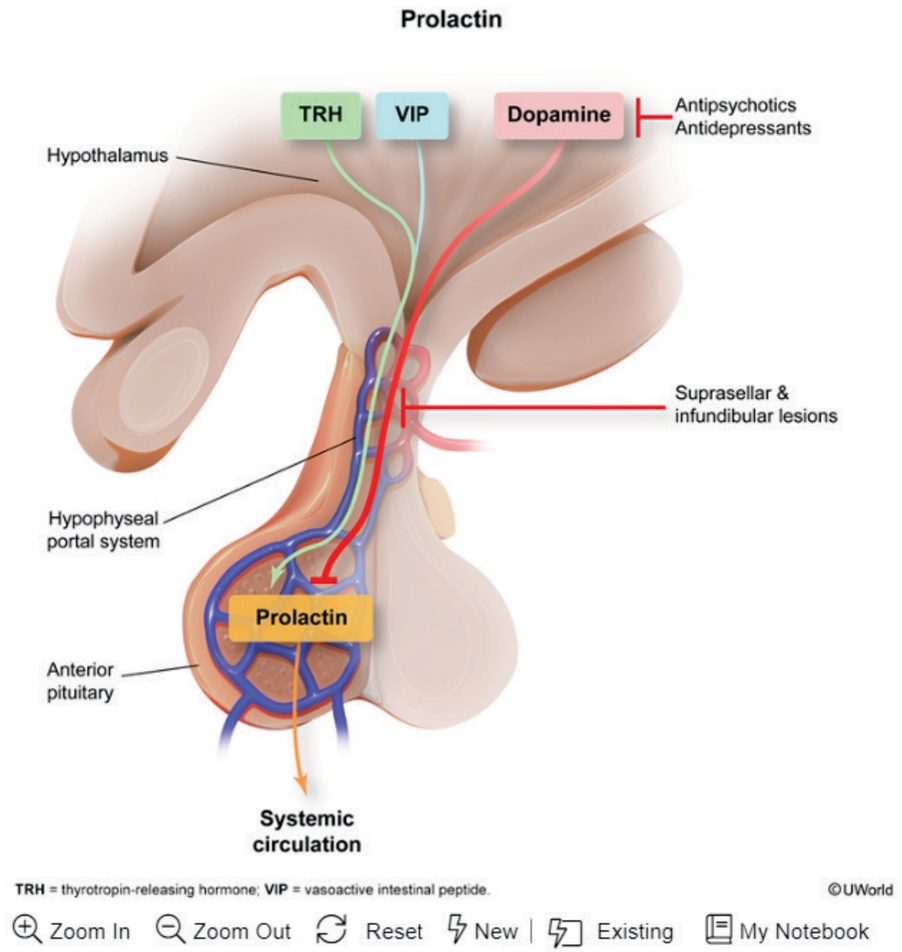

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Systemic

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This patient with amenorrhea and breast tenderness likely has drug-induced hyperprolactinemia due to **risperidone**, an antipsychotic drug used in the management of schizophrenia. Its primary action is to **inhibit** dopamine **D2 receptors**, but it also has inhibitory effects on serotonergic and alpha-adrenergic pathways.

Secretion of prolactin from the anterior pituitary is primarily regulated by the inhibitory effect of hypothalamic dopamine; stimulation of D2 receptors on lactotrophs decreases the synthesis and release of prolactin. Because risperidone and other antipsychotic drugs block D2 receptor activation, there is a **loss of the normal tonic inhibition of prolactin release**, leading to **hyperprolactinemia** in some cases. This can result in galactorrhea and breast soreness. In addition, elevated prolactin levels inhibit release of gonadotropin-releasing hormone from the hypothalamus, resulting in central hypogonadism and **amenorrhea**.

(Choice A) Nonclassic 21-hydroxylase deficiency may be associated with menstrual irregularity (most often oligomenorrhea), hirsutism, and acne in women. Nonclassic 21-hydroxylase deficiency most often presents in childhood or adolescence.

(Choice B) Asherman syndrome refers to the presence of severe intrauterine adhesions that cause amenorrhea and infertility. It typically occurs in patients who have had multiple dilation and curettage procedures or those with chronic endometritis.

(Choice D) Polycystic ovary syndrome is characterized by infertility, oligomenorrhea, and hyperandrogenism. It typically begins in adolescence and is unlikely to develop in a 38-year-old woman. Most patients with polycystic ovary syndrome are obese. Insulin resistance is thought to play a central role in its pathogenesis.

(Choice E) Primary ovarian insufficiency is characterized by amenorrhea, hypoestrogenism, and elevated serum gonadotropin levels in women age <40. The decreased estrogenic effect on breast tissue can cause a decline in breast density but would not cause tenderness.

(Choice F) Severe weight loss (eg, anorexia nervosa), intense exercise, and/or severe stress can cause amenorrhea by inducing functional hypothalamic amenorrhea. However, none of these would cause breast

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Educational objective:
The secretion of prolactin is controlled by the inhibitory effect of hypothalamic dopamine. Risperidone and other antipsychotics cause hyperprolactinemia by blocking D2 receptors on lactotrophs. Elevated prolactin leads to amenorrhea (inhibition of gonadotropin-releasing hormone release), galactorrhea, and breast soreness.

References

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A 27-year-old man with schizophrenia comes to the emergency department due to an acute muscle spasm in his neck that developed several days after starting treatment with haloperidol. He is extremely distressed and unable to turn his head. The patient is treated with intravenous diphenhydramine, which relieves his symptoms within minutes. A psychiatrist is consulted, and recommendations are made to discontinue haloperidol and start the second-generation antipsychotic quetiapine because of its lower risk for similar dystonic side effects. In addition to dopamine D2 receptor antagonism, this new medication has which of the following pharmacological properties?

- A. Dopamine reuptake inhibition
- B. Dopamine D2 partial agonist activity
- C. Monoamine oxidase inhibition
- D. Serotonin 2A receptor antagonism
- E. Serotonin and norepinephrine reuptake inhibition

Submit

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- A. Dopamine reuptake inhibition (2%)
- ✗ B. Dopamine D2 partial agonist activity (9%)
- C. Monoamine oxidase inhibition (3%)
- ✓ D. Serotonin 2A receptor antagonism (70%)
- E. Serotonin and norepinephrine reuptake inhibition (13%)

Incorrect
Correct answer
D

70%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

	Primary mechanism of action	Key side effects
First-generation antipsychotics	• Potent dopamine D2 receptor antagonism	• Extrapyramidal symptoms (acute dystonia, akathisia, parkinsonism, tardive dyskinesia)

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	Primary mechanism of action	Key side effects
First-generation antipsychotics	• Potent dopamine D2 receptor antagonism	• Extrapyramidal symptoms (acute dystonia, akathisia, parkinsonism, tardive dyskinesia)
Second-generation antipsychotics	• Dopamine D2 receptor antagonism • Serotonin 2A receptor antagonism	• Metabolic syndrome, weight gain • Extrapyramidal symptoms (less common than FGAs)

FGAs = first-generation antipsychotics.

This patient developed an acute dystonic reaction (a type of extrapyramidal symptom [EPS]) several days after exposure to the **first-generation antipsychotic** (FGA) haloperidol. FGAs have a **high risk of causing EPS** due to their potent **dopamine D2 receptor antagonism**. Management of an acute dystonic reaction includes treatment with diphenhydramine or benztropine and switching to an agent with a lower propensity for producing EPS, such as a **second-generation antipsychotic** (SGA).

In addition to dopamine D2 receptor antagonism, SGAs (eg, olanzapine, quetiapine) **also block serotonin receptors**, specifically the 5-HT2A receptor. Compared with FGAs, SGAs block 5-HT2A receptors more potently than D2 receptors and have lower binding affinity at the dopamine receptor site, which is thought to explain the reduced risk of causing EPS. Although SGAs have a **low risk of EPS**, they are associated with a **greater risk** of **metabolic adverse effects**.

(Choice A) Dopamine reuptake inhibition, usually in combination with norepinephrine reuptake inhibition, is the mechanism of action of many drugs used to treat ADHD (eg, methylphenidate, bupropion).

(Choice B) Dopamine D2 partial agonism is one of the mechanisms of action of the SGAs aripiprazole and brexpiprazole.

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(Choice A) Dopamine reuptake inhibition, usually in combination with norepinephrine reuptake inhibition, is the mechanism of action of many drugs used to treat ADHD (eg, methylphenidate, bupropion).

(Choice B) Dopamine D2 partial agonism is one of the mechanisms of action of the SGAs aripiprazole and brexpiprazole.

(Choice C) The monoamine oxidase enzyme normally breaks down monoamines (eg, dopamine, norepinephrine, serotonin). The class of antidepressants known as monoamine oxidase inhibitors (eg, phenelzine, tranylcypromine) block these enzymes, thereby increasing availability of the respective monoamines.

(Choice E) Serotonin and norepinephrine reuptake inhibition is the mechanism of action of serotonin and norepinephrine reuptake inhibitors (eg, venlafaxine) and tricyclic antidepressants (eg, amitriptyline).

Educational objective:
Second-generation antipsychotics block 5-HT2A receptors and have lower binding affinity at dopamine D2 receptor sites, which is associated with a lower risk of extrapyramidal side effects.

References

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A 15-year-old boy is brought to the office by his parents due to concern about his development. The patient has had a long-standing interest in fashion and a preference for having girls as friends, and his parents noticed that he recently bought women's underwear and shoes and went out to meet friends wearing makeup. They worry that he is being bullied since moving to a new high school last year. When interviewed privately the patient says, "I have always wanted to be a girl." He is distressed that his voice is deepening and that he is developing facial and pubic hair, which he shaves regularly. Which of the following is the most likely explanation of this patient's behavior?

- A. Bisexuality
- B. Body dysmorphic disorder
- C. Fetishistic disorder
- D. Gender dysphoria
- E. Transvestic disorder

Submit

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A 15-year-old boy is brought to the office by his parents due to concern about his development. The patient has had a long-standing interest in fashion and a preference for having girls as friends, and his parents noticed that he recently bought women's underwear and shoes and went out to meet friends wearing makeup. They worry that he is being bullied since moving to a new high school last year. When interviewed privately the patient says, "I have always wanted to be a girl." He is distressed that his voice is deepening and that he is developing facial and pubic hair, which he shaves regularly. Which of the following is the most likely explanation of this patient's behavior?

- A. Bisexuality (0%)
- ✗ B. Body dysmorphic disorder (2%)
- C. Fetishistic disorder (0%)
- ✓ D. Gender dysphoria (87%)
- E. Transvestic disorder (8%)

Incorrect
Correct answer
D

87%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

This patient's persistent desire to be female and significant **distress** at developing male secondary sexual characteristics are most consistent with **gender dysphoria** (GD). Individuals with GD experience discomfort from the **incongruence** between their gender **identity** (eg, an internal sense of what one's gender is) and their **assigned gender** at birth (either boy or girl based on external sexual anatomy). They often have a strong desire to live and be treated as another gender and become preoccupied with changing primary and secondary sexual characteristics. Preferences for playmates or friends of another gender and for the attire and typical interests and

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This patient's persistent desire to be female and significant **distress** at developing male secondary sexual characteristics are most consistent with **gender dysphoria** (GD). Individuals with GD experience discomfort from the **incongruence** between their gender **identity** (eg, an internal sense of what one's gender is) and their **assigned gender** at birth (either boy or girl based on external sexual anatomy). They often have a strong desire to live and be treated as another gender and become preoccupied with changing primary and secondary sexual characteristics. Preferences for playmates or friends of another gender and for the attire and typical interests and activities of another gender are characteristic.

Individuals with GD typically describe **identifying with another gender** since childhood or adolescence and frequently encounter bullying and discrimination. Gender-diverse adolescents struggling with these issues benefit from early identification and support to promote positive outcomes.

(Choice A) Bisexuality is a form of sexual orientation defined as being attracted (sexually, romantically, and/or emotionally) to more than one gender. Gender identity and expression (eg, behavior, clothing, hairstyle, makeup) are independent of an individual's sexual orientation.

(Choice B) Body dysmorphic disorder is characterized by preoccupation with slight to nonexistent defects in physical appearance. It is not diagnosed in patients who are preoccupied with changing only their primary and secondary sexual characteristics and who meet other diagnostic criteria for GD.

(Choice C) Fetishistic disorder involves sexual urges, fantasies, or behaviors that are focused on a nongenital body part or inanimate object, not including articles of clothing used in cross-dressing.

(Choice E) Transvestic disorder involves sexual arousal from cross-dressing. Unlike in GD, individuals with transvestic disorder do not typically report a desire to be another gender.

Educational objective:
Gender dysphoria is characterized by a strong and persistent desire to live and be treated as another gender, which causes distress or impairment. It is often accompanied by a desire to change one's primary or secondary sexual characteristics.

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A 5-year-old girl is brought to the office by her mother, who is concerned after observing her daughter speak to an empty chair in her room on several occasions. The girl's medical history is significant for preterm birth at 36 weeks gestation but is otherwise noncontributory. Her family history is significant for cerebrovascular accident and depression in her maternal grandfather and schizoaffective disorder in her father. When questioned, the patient says she sees her grandmother at night and likes to speak to her before she goes to bed. The grandmother died 2 months ago and had lived in the family home. For a few weeks following the death, the girl would become tearful and frequently ask her parents when her grandmother would be coming back. Which of the following is the most likely diagnosis in this patient?

- A. Acute stress disorder
- B. Brief psychotic disorder
- C. Major depression with psychotic features
- D. Normal behavior
- E. Post-traumatic stress disorder
- F. Schizophreniform disorder

Submit

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- A. Acute stress disorder (5%)
- ✕ B. Brief psychotic disorder (3%)
- C. Major depression with psychotic features (1%)
- ✓ D. Normal behavior (79%)
- E. Post-traumatic stress disorder (5%)
- F. Schizophreniform disorder (4%)

Incorrect
Correct answer
D

79%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

This child is experiencing **hallucinations** of her recently deceased grandmother that appear to be comforting. Studies suggest that behavioral disturbances are common in **children** the year following the death of a loved one

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This child is experiencing **hallucinations** of her recently deceased grandmother that appear to be comforting. Studies suggest that behavioral disturbances are common in **children** the year following the death of a loved one and that children try to maintain a connection with the lost loved one as a way of coping with loss. In the absence of other psychiatric symptoms (eg, other psychotic symptoms, severe mood symptoms, social or academic problems), these hallucinations are unlikely to be a symptom of mental illness and are likely a way of holding on to the grandmother during the **bereavement** process. The mother should be reassured that this is a **normal** response to loss.

Children under age 6 do not understand the finality of death and may believe that it is temporary or reversible. By the age of 7, children usually understand that death is permanent but may have difficulty understanding abstract concepts (eg, soul, heaven) until adolescence.

Parents can help young children mourn by supporting their expression about the deceased, maintaining routine, reassuring them that the death and other people's reactions are not their fault, and responding truthfully to their children's questions in a concrete fashion.

(Choices A and E) Hallucinations should be differentiated from nightmares and flashbacks that may occur in acute stress disorder and post-traumatic stress disorder (PTSD). These disorders typically involve exposure to actual or threatened death, serious injury, or sexual violence followed by development of characteristic symptoms (eg, intrusive flashbacks, nightmares, avoidance, detachment, hyperarousal). Acute stress disorder lasts from 3 days to 1 month, and PTSD lasts more than 1 month.

(Choices B and F) Childhood-onset psychotic disorders are rare, and this child exhibits no other psychotic symptoms (eg, delusions, disorganization, negative symptoms). Psychotic disorders can be differentiated by duration; brief psychotic disorder lasts for less than 1 month, schizophreniform disorder lasts 1-6 months, and schizophrenia lasts 6 months or more.

(Choice C) This patient exhibits no persistent depressive symptoms that would be required to diagnose major depressive disorder with psychotic features.

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Children under age 6 do not understand the finality of death and may believe that it is temporary or reversible. By the age of 7, children usually understand that death is permanent but may have difficulty understanding abstract concepts (eg, soul, heaven) until adolescence.

Parents can help young children mourn by supporting their expression about the deceased, maintaining routine, reassuring them that the death and other people's reactions are not their fault, and responding truthfully to their children's questions in a concrete fashion.

(Choices A and E) Hallucinations should be differentiated from nightmares and flashbacks that may occur in acute stress disorder and post-traumatic stress disorder (PTSD). These disorders typically involve exposure to actual or threatened death, serious injury, or sexual violence followed by development of characteristic symptoms (eg, intrusive flashbacks, nightmares, avoidance, detachment, hyperarousal). Acute stress disorder lasts from 3 days to 1 month, and PTSD lasts more than 1 month.

(Choices B and F) Childhood-onset psychotic disorders are rare, and this child exhibits no other psychotic symptoms (eg, delusions, disorganization, negative symptoms). Psychotic disorders can be differentiated by duration; brief psychotic disorder lasts for less than 1 month, schizophreniform disorder lasts 1-6 months, and schizophrenia lasts 6 months or more.

(Choice C) This patient exhibits no persistent depressive symptoms that would be required to diagnose major depressive disorder with psychotic features.

Educational objective:
Transient behavioral disturbances are common in children after the death of a loved one. Hallucinations of recently deceased relatives are part of a normal grief reaction and may not be indicative of major psychiatric illness.

References

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A 22-year-old college student comes to the office due to tension headaches and neck pain. He has had these symptoms for many years, but they have increased in frequency over the past 7 months since he started working at a coffee shop. The patient attends college and says that although his grades are passing, he feels overwhelmed and fatigued: "I can't concentrate on my schoolwork and worry that I will flunk out of school and never get a good job." He sleeps very fitfully and frequently worries about his grades, health, and social life. He obsesses about minor comments his friends have made about how "serious" he is, and gets depressed thinking that he is not attractive enough to get a girlfriend. Which of the following is the most likely diagnosis in this patient?

- A. Adjustment disorder
- B. Generalized anxiety disorder
- C. Major depressive disorder
- D. Obsessive-compulsive personality disorder
- E. Social anxiety disorder
- F. Somatic symptom disorder

Submit

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- A. Adjustment disorder (2%)
- ✓ B. Generalized anxiety disorder (77%)
- C. Major depressive disorder (4%)
- D. Obsessive-compulsive personality disorder (4%)
- E. Social anxiety disorder (5%)
- F. Somatic symptom disorder (5%)

Correct

77% Answered correctly

05 secs Time Spent

2023 Version

Explanation

Generalized anxiety disorder in children & adolescents	
	• Excessive, uncontrollable worry (multiple issues) ≥6 months

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Generalized anxiety disorder in children & adolescents	
Clinical features	• Excessive, uncontrollable worry (multiple issues) ≥6 months • ≥1 of the following symptoms: ◦ Restlessness; feeling on edge ◦ Fatigue ◦ Difficulty concentrating ◦ Irritability ◦ Muscle tension ◦ Sleep disturbance
Associated features	• Physical symptoms: stomachaches, headaches • Perfectionism
Treatment	• Cognitive-behavioral therapy • SSRIs or SNRIs
Differential diagnosis	• Adjustment disorder (response to identifiable stressor) • Obsessive-compulsive disorder (intrusive thoughts; compulsive behaviors) • Separation anxiety disorder (anxiety focused on separation from caregiver) • Social anxiety disorder (fears of negative evaluation in social/performance situations)
SNRI = serotonin-norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor.	

This patient's excessive chronic anxiety, muscle tension (tension headaches, neck pain), sleep disturbance, fatigue, and difficulty concentrating all support a diagnosis of **generalized anxiety disorder (GAD)**. Patients with GAD experience excessive and **uncontrollable worry** about **multiple issues**. A symptom duration of ≥6 months is required for diagnosis, but many patients with GAD describe lifelong anxiety. In addition to muscle tension, other

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This patient's excessive chronic anxiety, muscle tension (tension headaches, neck pain), sleep disturbance, fatigue, and difficulty concentrating all support a diagnosis of **generalized anxiety disorder (GAD)**. Patients with GAD experience excessive and **uncontrollable worry** about **multiple issues**. A symptom duration of ≥6 months is required for diagnosis, but many patients with GAD describe lifelong anxiety. In addition to muscle tension, other somatic symptoms are commonly seen (eg, sweating, gastrointestinal distress) and may prompt the patient to seek medical attention. First-line treatment includes cognitive-behavioral therapy and antidepressants (ie, selective serotonin reuptake inhibitors, serotonin-norepinephrine reuptake inhibitors).

(Choice A) In adjustment disorder, behavioral symptoms develop within 3 months of an identifiable stressor and do not meet criteria for any other DSM-5 disorder. This patient's symptoms are not the result of a specific inciting factor.

(Choice C) Although some symptoms of GAD overlap with depression (ie, sleep disturbance, low energy, poor concentration), this patient is predominantly anxious. His depression is related to his worries about social acceptance; he does not meet the full criteria for a major depressive disorder.

(Choice D) Obsessive-compulsive personality disorder is characterized by a need for perfectionism, control, and orderliness.

(Choice E) In social anxiety disorder, anxiety occurs exclusively in response to social interactions in which the patient fears negative evaluation by others. In contrast, this patient's concerns extend to multiple situations.

(Choice F) Patients with GAD frequently have anxiety about their health but among a range of other concerns. In somatic symptom disorder, the distress is centered on ≥1 somatic symptoms.

Educational objective:
Generalized anxiety disorder involves excessive uncontrollable worry about multiple issues with a symptom duration of ≥6 months. Associated symptoms include restlessness, muscle tension, fatigue, sleep disturbance, irritability, and difficulty concentrating.

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A 16-year-old boy is brought to the office for a well-child visit. The patient has no medical history but reports that his appetite is low and he has lost 2.3 kg (5 lb). He stopped playing soccer recently due to lack of interest. The patient is also worried about his grades due to difficulty staying focused in class and concentrating on his homework after school. He feels tired despite sleeping 10 hours a night and taking afternoon naps when he gets home. The patient says, "My parents try to be supportive, but everything they say these days gets on my nerves." He has tried alcohol and marijuana a few times at parties but does not use other drugs. Vital signs are within normal limits. Physical examination is unremarkable. Which of the following is the most appropriate next step in management of this patient?

- A. Administer an attention deficit hyperactivity disorder rating scale
- B. Ask to speak with the patient's parents
- C. Check complete blood count
- D. Check thyroid function
- E. Inquire about suicidal thoughts
- F. Obtain a urine drug screen

Submit

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- A. Administer an attention deficit hyperactivity disorder rating scale (2%)
- ✕ B. Ask to speak with the patient's parents (3%)
- C. Check complete blood count (3%)
- D. Check thyroid function (11%)
- ✓ E. Inquire about suicidal thoughts (72%)
- F. Obtain a urine drug screen (5%)

Incorrect
Correct answer
E

72%
Answered correctly

15 secs
Time Spent

2023
Version

Explanation

Major depressive disorder in adolescents	
	>2 weeks of ≥5 of 9 symptoms: depressed mood & SIGECAPS:

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Major depressive disorder in adolescents	
Diagnosis	• ≥2 weeks of ≥5 of 9 symptoms: depressed mood & **SIGECAPS**: ◦ **S**leep disturbance, loss of **I**nterest, excessive **G**uilt, low **E**nergy, impaired **C**oncentration, **A**ppetite disturbance, **P**sychomotor agitation/retardation, **S**uicidal ideation. • No history of mania • Not due to substances or another medical condition
Characteristic features in adolescents	• Anger, annoyance, irritability • Neglected appearance • Social withdrawal from friends • Declining academic performance • Substance use
Assessment	• Clinical interview, mental status examination • Assessment of suicide risk • Laboratory tests to rule out medical conditions as indicated by history/physical examination

This patient's loss of interest, weight loss, hypersomnia, low energy level, and impaired concentration are concerning for **major depressive disorder** (MDD). Depressed **adolescents** may experience feelings of annoyance and **irritability** rather than sadness. Other common signs are loss of interest in previously enjoyed activities, changes in academic functioning and relationships with peers and family, feelings of worthlessness/inappropriate guilt, and suicidal thoughts.

Suicide is the third leading cause of death in adolescents age 15-19 years. Any adolescent with behavioral

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Suicide is the third leading cause of death in adolescents age 15-19 years. Any adolescent with behavioral changes should be **assessed** for **suicidal ideation**, which has an immediate impact on safety and acute management (eg, an actively suicidal patient may require hospitalization). Therefore, the most appropriate next step is to assess this patient for suicidal thoughts.

(Choice A) This patient's recent difficulty concentrating is one of multiple symptoms characteristic of depression. In attention deficit hyperactivity disorder, concentration difficulties are chronic, with typical onset prior to adolescence.

(Choice B) It would be inappropriate to involve the parents prior to fully assessing the patient and his safety.

(Choices C and D) A complete blood count and thyroid function testing may be included as part of a workup to rule out medical causes of depressive symptoms (eg, anemia, hypothyroidism or hyperthyroidism). However, these conditions are unlikely to be contributory in a patient with no medical history and a normal physical examination. In addition, the results of these tests take time, whereas suicidality and safety are immediate concerns.

(Choice F) This patient appears to be forthcoming about his substance use and has no signs of intoxication or abuse. Screening the urine for drugs is unlikely to yield helpful information and may damage the trusting relationship with the patient.

Educational objective:
Depressed adolescents may display irritable rather than depressed mood, declining academic performance, and withdrawal from social activities. Initial evaluation of all children and adolescents with suspected depression

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(Choice F) This patient appears to be forthcoming about his substance use and has no signs of intoxication or abuse. Screening the urine for drugs is unlikely to yield helpful information and may damage the trusting relationship with the patient.

Educational objective:
Depressed adolescents may display irritable rather than depressed mood, declining academic performance, and withdrawal from social activities. Initial evaluation of all children and adolescents with suspected depression should include a careful suicide risk assessment.

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A 67-year-old man comes to the hospital due to an acute worsening of chronic back pain associated with new-onset bilateral leg weakness and numbness. He has a history of colorectal cancer with vertebral metastases for which he has received colectomy, chemotherapy, and radiation treatment. The patient takes oral morphine sulfate for his back pain. Examination shows focal vertebral tenderness, along with reduced muscular strength, decreased sensitivity to light touch, and spasticity in both legs. Imaging studies reveal a vertebral compression fracture with cord compression. Surgical decompression is planned. Which of the following drugs may precipitate opioid withdrawal symptoms if used in this patient?

- A. Buprenorphine
- B. Codeine
- C. Fentanyl
- D. Hydromorphone
- E. Meperidine
- F. Methadone
- G. Oxymorphone

Submit

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- ✓ A. Buprenorphine (45%)
- B. Codeine (5%)
- ✗ C. Fentanyl (11%)
- D. Hydromorphone (3%)
- E. Meperidine (12%)
- F. Methadone (18%)
- G. Oxymorphone (2%)

Incorrect
Correct answer
A

45%
Answered correctly

05 secs
Time Spent

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Explanation

Opioids work by selectively binding to G protein-coupled opioid receptors, mimicking the actions of endogenous opioid peptides. However, long-term activation of mu-opioid receptors on nociception-transmitting neurons is

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Explanation

Opioids work by selectively binding to G protein-coupled opioid receptors, mimicking the actions of endogenous opioid peptides. However, long-term activation of mu-opioid receptors on nociception-transmitting neurons is associated with increased pain sensitivity (central sensitization) due to:

- Increased turnover of inhibitory opioid receptors (receptor downregulation) and decoupling of receptors from their second messenger system (receptor decoupling)
- Upregulation of excitatory N-methyl-D-aspartate (NMDA) receptors

This manifests as an increasing dose requirement to provide the same level of pain relief (**tolerance**) and pain sensations triggered by benign stimuli (**opioid-induced hyperalgesia**). Opioid withdrawal can occur within 24-48 hours of acute cessation in opioid-tolerant patients and is characterized by nausea/vomiting, myalgias, dilated pupils, diaphoresis, and tachycardia.

Buprenorphine is a partial opioid agonist that has low intrinsic activity (efficacy) for opioid mu-receptors. However, it binds with high affinity (potency) and can prevent binding of other opioid medications. Therefore, buprenorphine acts as an opioid receptor antagonist in the presence of full opioid agonists and can precipitate **withdrawal** in opioid-tolerant patients with chronic pain.

(Choices B, C, D, E, F, and G) These other agents are full agonists of the opioid mu-receptor. Although they vary in potency, none have significant opioid receptor antagonist properties. Use of these drugs in equianalgesic doses should not cause withdrawal.

Educational objective:
Buprenorphine is a partial opioid receptor agonist that binds with high affinity but has low intrinsic activity. In patients on long-term opioid therapy, buprenorphine can displace other opioids and precipitate withdrawal.

References

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An 18-year-old woman comes to the office due to low energy, decreased appetite, insomnia, poor concentration, and decreased interest in her daily activities. She has lost 3.6 kg (8 lb) over the last month. The patient has no psychiatric history and has no current or significant medical illnesses. Physical examination and laboratory evaluation are unremarkable. Treatment with medication is initiated. Three weeks later, the patient is brought to the emergency department by her mother for not sleeping at all for 3 nights. The patient reports that she does not feel tired despite lack of sleep. She spent a large amount of money on plane tickets and plans to travel around the world to promote world peace. Her mother adds that she herself has suffered from severe mood swings in the past. This patient was most likely started on which of the following medications 3 weeks ago?

- A. Carbamazepine
- B. Lamotrigine
- C. Lithium
- D. Olanzapine
- E. Sertraline
- F. Valproate

Submit

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- A. Carbamazepine (1%)
- ✗ B. Lamotrigine (2%)
- C. Lithium (16%)
- D. Olanzapine (4%)
- ✓ E. Sertraline (72%)
- F. Valproate (2%)

Incorrect
Correct answer
E

72%
Answered correctly

03 secs
Time Spent

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Explanation

This patient initially had symptoms of major depressive disorder (ie, loss of interest, low energy, weight loss, insomnia, impaired concentration) and was most likely prescribed an antidepressant (eg, sertraline) as first-line

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Explanation

This patient initially had symptoms of major depressive disorder (ie, loss of interest, low energy, weight loss, insomnia, impaired concentration) and was most likely prescribed an antidepressant (eg, sertraline) as first-line therapy. Three weeks later in the emergency department, she exhibits symptoms of mania (ie, decreased need for sleep, increased energy, reckless spending, and grandiosity). All **antidepressants** carry a **risk of inducing mania** in susceptible patients. Antidepressant-induced mania can occur early in the first few days or weeks of starting the medication (even before the time frame normally expected for an antidepressant to take effect).

In this case, the mother's history of severe mood swings suggests a **family history of bipolar disorder** that places the patient at increased risk for developing this disorder. If a patient becomes manic or hypomanic on antidepressant therapy, the antidepressant should be stopped.

(Choices A, C, and F) Carbamazepine, lithium, and valproate are mood stabilizers used in acute episodes and maintenance treatment of bipolar disorder. This patient presented with depression, with no known history of bipolar disorder at that time. A mood stabilizer would not have been the initial first-line treatment.

(Choice B) Lamotrigine, an anticonvulsant mood stabilizer, is effective in the depressed phase of bipolar disorder and is also used in the maintenance phase. Its use would have been appropriate if the patient had a known bipolar disorder at initial presentation. Lamotrigine is associated with a risk of benign rash that can progress to serious rash (including Stevens-Johnson syndrome) in rare cases.

(Choice D) Olanzapine is a second-generation antipsychotic with mood-stabilizing properties that can be used in bipolar disorder. It is associated with weight gain and metabolic side effects.

Educational objective:
Antidepressant monotherapy can induce mania in susceptible patients, especially those with unrecognized bipolar disorder.

References

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A 32-year-old man is diagnosed with major depressive disorder and started on a selective serotonin reuptake inhibitor. At his 2-week follow-up appointment, the patient reports that his mood is "about the same." He continues to feel sad and unmotivated most days and is short-tempered with his wife and kids. The patient has little interest in food, sleeps poorly, and struggles to stay focused at work. He initially experienced some nausea and worsening insomnia with the medication, but these issues have since resolved. The patient drinks 4 or 5 beers a week and does not use recreational substances. He is discouraged by the lack of clear improvement and is anxious that he "will never get better." Which of the following is the most likely explanation for this patient's lack of response?

- A. Adverse medication effects
- B. Comorbid anxiety disorder
- C. Concurrent alcohol use
- D. Duration of treatment
- E. Treatment-resistant depression

Submit

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- A. Adverse medication effects (0%)
- ✗ B. Comorbid anxiety disorder (1%)
- C. Concurrent alcohol use (7%)
- ✓ D. Duration of treatment (85%)
- E. Treatment-resistant depression (4%)

Incorrect
Correct answer
D

85%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Major depressive disorder	
	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure): ◦ Depressed mood

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Major depressive disorder	
Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure): ◦ Depressed mood ◦ Loss of interest or pleasure ◦ Change in appetite or weight ◦ Insomnia or hypersomnia ◦ Psychomotor retardation or agitation ◦ Low energy ◦ Poor concentration or indecisiveness ◦ Thoughts of worthlessness or inappropriate guilt ◦ Recurrent thoughts of death or suicide • No history of mania or hypomania • Not due to substances or another medical condition

This patient has classic symptoms of **major depressive disorder** (MDD) (eg, sadness, irritability, amotivation, sleep and appetite disturbances, impaired concentration) and is being treated appropriately with a **selective serotonin reuptake inhibitor** (SSRI) (eg, sertraline, fluoxetine, citalopram).

As a drug class, antidepressants are associated with an interval **delay between** drug **initiation and clinical response**. Although some patients with MDD may have an early response to antidepressants apparent within 2 weeks, an adequate antidepressant trial is generally considered to be **at least 4-6 weeks**. At this point, the most likely explanation for this patient's poor response is inadequate duration of antidepressant treatment. While this patient expresses frustration that symptoms have not improved quickly enough (eg, "is discouraged," "anxious that he 'will never get better'"), he should be encouraged to continue taking the medication for at least 2-4 more weeks before the next step in treatment is considered.

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This patient has classic symptoms of **major depressive disorder** (MDD) (eg, sadness, irritability, amotivation, sleep and appetite disturbances, impaired concentration) and is being treated appropriately with a **selective serotonin reuptake inhibitor** (SSRI) (eg, sertraline, fluoxetine, citalopram).

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In addition, patients should be counseled about common transient side effects of SSRIs, including temporary gastrointestinal distress (eg, nausea) and brief symptoms overlapping with common anxiety presentations (eg, restlessness, insomnia), to avoid premature discontinuation and/or misattribution to additional disorders **(Choices A and B)**.

(Choice C) Excessive alcohol use can present with an alcohol-induced depressive disorder and should be considered in all patients with recent or ongoing alcohol use and mood complaints. However, at 4 or 5 beers a week, this man's use is below the unhealthy range (ie, >4 drinks/day or >14 drinks/week for men; >3 drinks/day or >7 drinks/week for women) and is unlikely to be the cause of his depressive symptoms or lack of treatment response.

(Choice E) Treatment-resistant depression is commonly defined as failure to respond to at least 2 adequate antidepressant trials. This patient cannot be considered treatment resistant because he has had an inadequate trial of a single medication.

Educational objective:
An adequate antidepressant (eg, selective serotonin reuptake inhibitors) trial is generally considered to be at least

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Behavioral science | Psychiatric/Behavioral & Substance Use Disorder | Antidepressants

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A 39-year-old man is brought to the office by his wife who is concerned about his behavior over the past year. She says, "He used to be outgoing and upbeat, but now he seems uncharacteristically depressed and distant from the family. He has lost interest in his work and has difficulty making decisions." Over the past month, he has become increasingly paranoid and believes that his business partner is trying to kill him. The patient has no psychiatric history. Both his father and grandfather were hospitalized in long-term care facilities and died in their 50s. Physical examination shows random, abrupt, uncoordinated movements of the left leg. On mental status examination the patient is restless and irritable. He is convinced that not only his business partner but also the government is out to harm him. Which of the following is the most likely diagnosis?

- A. Brief psychotic disorder
- B. Delusional disorder
- C. Friedreich ataxia
- D. Huntington disease
- E. Major depression with psychotic features
- F. Parkinson disease
- G. Schizoaffective disorder
- H. Schizophrenia

Submit

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- A. Brief psychotic disorder (1%)
- ✗ B. Delusional disorder (4%)
- C. Friedreich ataxia (2%)
- ✓ D. Huntington disease (65%)
- E. Major depression with psychotic features (12%)
- F. Parkinson disease (1%)
- G. Schizoaffective disorder (5%)
- H. Schizophrenia (8%)

Incorrect
Correct answer
D

65%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

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This patient's development of psychiatric symptoms in his late-30s, abnormal **choreiform movements** (rapid and unpredictable contractions affecting mostly distal limbs), and family history are suggestive of **Huntington disease** (HD). HD is an autosomal dominant, progressive neurodegenerative disorder characterized by chorea, psychiatric symptoms, and subsequent dementia. **Onset in mid-life** is most common. There is no known cure and treatment is symptomatic.

Psychiatric symptoms are highly prevalent in HD and may occur prior to the onset of chorea. They may include irritability, anxiety, apathy, depression, and psychosis (eg, delusions, hallucinations). **Dementia** develops later in the disease course and is characterized by prominent executive dysfunction. The diagnosis of HD is confirmed by testing for trinucleotide (cytosine-adenine-guanine [CAG]) **repeat expansion** in the huntingtin (*HTT*) gene.

(Choices A, B, and H) These are primary psychotic disorders that would not be diagnosed when psychosis is due to a medical condition. Brief psychotic disorder is characterized by ≥1 psychotic symptoms lasting ≥1 days and ≤1 month with full return to the previous level of functioning. Delusional disorder is characterized ≥1 delusions lasting ≥1 month. Schizophrenia typically has onset in young adulthood and is characterized by psychotic symptoms (eg, delusions, hallucinations, disorganization, negative symptoms) lasting ≥ 6 months.

(Choice C) Friedreich ataxia, the most common hereditary ataxia, is characterized by neurologic dysfunction, cardiomyopathy, and diabetes mellitus.

(Choices E and G) Although this patient has both mood and psychotic symptoms, they are more likely manifestations of HD given his movement abnormalities. In major depression with psychotic features, psychosis occurs exclusively during the depression. In schizoaffective disorder, patients show evidence of psychosis when they are not depressed.

(Choice F) Parkinson disease (PD) is a progressive neurodegenerative disease characterized by tremor, bradykinesia, and rigidity. Psychosis can also occur in PD but typically presents later in the disease course. PD is less likely in this patient with early psychiatric findings, choreiform movements, and absence of other neurological

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Psychiatric symptoms are highly prevalent in HD and may occur prior to the onset of chorea. They may include irritability, anxiety, apathy, depression, and psychosis (eg, delusions, hallucinations). **Dementia** develops later in the disease course and is characterized by prominent executive dysfunction. The diagnosis of HD is confirmed by testing for trinucleotide (cytosine-adenine-guanine [CAG]) **repeat expansion** in the huntingtin (*HTT*) gene.

(Choices A, B, and H) These are primary psychotic disorders that would not be diagnosed when psychosis is due to a medical condition. Brief psychotic disorder is characterized by ≥1 psychotic symptoms lasting ≥1 days and ≤1 month with full return to the previous level of functioning. Delusional disorder is characterized ≥1 delusions lasting ≥1 month. Schizophrenia typically has onset in young adulthood and is characterized by psychotic symptoms (eg, delusions, hallucinations, disorganization, negative symptoms) lasting ≥ 6 months.

(Choice C) Friedreich ataxia, the most common hereditary ataxia, is characterized by neurologic dysfunction, cardiomyopathy, and diabetes mellitus.

(Choices E and G) Although this patient has both mood and psychotic symptoms, they are more likely manifestations of HD given his movement abnormalities. In major depression with psychotic features, psychosis occurs exclusively during the depression. In schizoaffective disorder, patients show evidence of psychosis when they are not depressed.

(Choice F) Parkinson disease (PD) is a progressive neurodegenerative disease characterized by tremor, bradykinesia, and rigidity. Psychosis can also occur in PD but typically presents later in the disease course. PD is less likely in this patient with early psychiatric findings, choreiform movements, and absence of other neurological findings of PD (eg, tremor, bradykinesia).

Educational objective:
Huntington disease is an autosomal dominant, progressive neurodegenerative disorder characterized by chorea, psychiatric symptoms, and dementia. Psychiatric symptoms may occur early in the disease course and include irritability, anxiety, apathy, depression, and psychosis.

References

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A 24-year-old man is hospitalized after a violent episode in which he destroyed his television with a baseball bat. Over the past year, the patient was convinced that people on television were monitoring his thoughts and movements and that certain newscasters were laughing at him. At night, he was unable to sleep and reported hearing the voices of demons threatening to kill him. The patient was diagnosed with schizophrenia and initially treated with chlorpromazine. He now is reluctant to take the medication, saying, "I don't like how it makes me feel." His medication is subsequently changed to fluphenazine. Compared to the patient's initial treatment, fluphenazine is more likely to cause which of the following?

- A. Constipation
- B. Dizziness
- C. Dry mouth
- D. Hyperglycemia
- E. Muscular rigidity
- F. Sedation
- G. Urinary retention

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- A. Constipation (2%)
- ✗ B. Dizziness (3%)
- C. Dry mouth (7%)
- D. Hyperglycemia (10%)
- ✓ E. Muscular rigidity (60%)
- F. Sedation (11%)
- G. Urinary retention (3%)

Incorrect
Correct answer
E

60%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

First-generation antipsychotics side effects		

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First-generation antipsychotics side effects		
Type	**Side Effects**	**Examples**
Low-potency (non-neurological)	• Sedation (histaminergic blockade) • Anticholinergic side effects (cholinergic blockade) • Orthostatic hypotension (alpha-1 adrenergic blockade)	• Chlorpromazine • Thioridazine
High-potency (neurological)	Extrapyramidal symptoms: • Acute dystonia • Akathisia • Parkinsonism	• Haloperidol • Fluphenazine

First-generation antipsychotics (FGAs), also known as typical or conventional antipsychotics, are effective in treating schizophrenia and psychosis due to other causes. FGAs are classified according to potency, which refers to the dose required to produce an effect. **Low-potency FGAs** primarily cause **histaminergic**, **cholinergic**, and **noradrenergic blockade** side effects. These drugs are highly sedating and often cause anticholinergic side effects and orthostatic hypotension. **High-potency FGAs** are associated primarily with **extrapyramidal symptoms** (eg, dystonia, akathisia, parkinsonism) due to potent D2 dopamine receptor antagonism in the nigrostriatal pathway.

This patient's medication was changed from a low-potency FGA (chlorpromazine) to a high-potency FGA (fluphenazine). Muscular rigidity, an extrapyramidal side effect, is seen in drug-induced parkinsonism; it is more likely to occur with a high-potency agent.

(Choices A, C, and G) Constipation, dry mouth, and urinary retention are anticholinergic side effects due to cholinergic receptor blockade. They are more common with low-potency antipsychotics. Other anticholinergic side effects include blurred vision and impaired cognitive function.

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First-generation antipsychotics (FGAs), also known as typical or conventional antipsychotics, are effective in treating schizophrenia and psychosis due to other causes. FGAs are classified according to potency, which refers to the dose required to produce an effect. **Low-potency FGAs** primarily cause **histaminergic**, **cholinergic**, and **noradrenergic blockade** side effects. These drugs are highly sedating and often cause anticholinergic side effects and orthostatic hypotension. **High-potency FGAs** are associated primarily with **extrapyramidal symptoms** (eg, dystonia, akathisia, parkinsonism) due to potent D2 dopamine receptor antagonism in the nigrostriatal pathway.

This patient's medication was changed from a low-potency FGA (chlorpromazine) to a high-potency FGA (fluphenazine). Muscular rigidity, an extrapyramidal side effect, is seen in drug-induced parkinsonism; it is more likely to occur with a high-potency agent.

(Choices A, C, and G) Constipation, dry mouth, and urinary retention are anticholinergic side effects due to cholinergic receptor blockade. They are more common with low-potency antipsychotics. Other anticholinergic side effects include blurred vision and impaired cognitive function.

(Choice B) Dizziness and orthostatic hypotension are due to alpha-1 adrenergic blockade and are more common with low-potency FGAs. Orthostatic hypotension is particularly problematic in the elderly due to the risk of falls.

(Choice D) Hyperglycemia is a metabolic side effect seen more commonly with second-generation antipsychotics.

(Choice F) Sedation is due to histamine receptor blockade that is more common with low-potency antipsychotics.

Educational objective:
First-generation antipsychotics can be classified according to high or low potency and have characteristic side effect profiles. Low-potency antipsychotics are more likely to cause sedation, anticholinergic side effects, and orthostatic hypotension. High-potency antipsychotics are more likely to cause extrapyramidal symptoms (eg, dystonia, akathisia, parkinsonism).

References

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A healthy 8-year-old boy is brought to the office by his parents for an annual checkup. Both parents express concern about their son's behavior. The mother says, "He never listens and I am always worried that he is going to run out into the street without looking. He rarely sits still and is always running and jumping on the furniture." The father adds, "He talks all the time, interrupts me when I'm speaking, and, despite multiple reminders, forgets to do his chores and misplaces or loses his books or sporting equipment. We thought he would grow out of it as he got older, but it seems to be getting worse." Physical examination is unremarkable. Which of the following would be most helpful in establishing the diagnosis?

- A. Brain imaging
- B. Hearing test
- C. Quantitative EEG
- D. Speech and language evaluation
- E. Teacher evaluations
- F. Toxicology screening

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A healthy 8-year-old boy is brought to the office by his parents for an annual checkup. Both parents express concern about their son's behavior. The mother says, "He never listens and I am always worried that he is going to run out into the street without looking. He rarely sits still and is always running and jumping on the furniture." The father adds, "He talks all the time, interrupts me when I'm speaking, and, despite multiple reminders, forgets to do his chores and misplaces or loses his books or sporting equipment. We thought he would grow out of it as he got older, but it seems to be getting worse." Physical examination is unremarkable. Which of the following would be most helpful in establishing the diagnosis?

- A. Brain imaging (0%)
- ✗ B. Hearing test (7%)
- C. Quantitative EEG (1%)
- D. Speech and language evaluation (5%)
- ✓ E. Teacher evaluations (84%)
- F. Toxicology screening (0%)

Incorrect
Correct answer
E

84%
Answered correctly

04 secs
Time Spent

2023
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Explanation

Attention deficit hyperactivity disorder	
	• Inattentive &/or hyperactive/impulsive symptoms for ≥6 months

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Attention deficit hyperactivity disorder	
Clinical features	• Inattentive &/or hyperactive/impulsive symptoms for ≥6 months ◦ **Inattentive symptoms:** difficulty focusing, distractible, does not listen or follow instructions, disorganized, forgetful, loses/misplaces objects ◦ **Hyperactive/impulsive symptoms:** fidgety, unable to sit still, "driven by a motor," hyper-talkative, interrupts, blurts out answers • Several symptoms present before age 12; may persist to adulthood • Symptoms occur in at least 2 settings (home, school) & cause functional impairment
Treatment	• Stimulants (methylphenidate, amphetamines) • Behavioral therapy

This patient's inattention, inability to sit still, and impulsivity are concerning for possible attention-deficit hyperactivity disorder **(ADHD)**. The diagnosis of ADHD is made clinically and requires evidence of **symptoms** in **≥2 settings** (eg, home, school, after-school program). Demonstration of functional impairment due to symptoms (eg, academic difficulties, impaired social relationships, peer rejection) is also required.

Obtaining **teacher evaluations** to determine if the symptoms extend beyond the home environment would be the most helpful step in establishing the diagnosis. Teachers can provide observations of classroom behavior over an extended period (eg, 6 months) and assist in determining if the symptoms are excessive compared to same-age peers (eg, comparative degree of inattentiveness, difficulty staying seated and/or following directions, talkativeness, disruptive classroom behavior). Teacher evaluations may also incorporate validated ADHD-specific rating scales, which can help assess core symptom severity and monitor response to treatment.

(Choices A and C) Brain imaging and EEG are not performed routinely in the work-up of ADHD in the absence of

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This patient's inattention, inability to sit still, and impulsivity are concerning for possible attention-deficit hyperactivity disorder **(ADHD)**. The diagnosis of ADHD is made clinically and requires evidence of **symptoms** in **≥2 settings** (eg, home, school, after-school program). Demonstration of functional impairment due to symptoms (eg, academic difficulties, impaired social relationships, peer rejection) is also required.

Obtaining **teacher evaluations** to determine if the symptoms extend beyond the home environment would be the most helpful step in establishing the diagnosis. Teachers can provide observations of classroom behavior over an extended period (eg, 6 months) and assist in determining if the symptoms are excessive compared to same-age peers (eg, comparative degree of inattentiveness, difficulty staying seated and/or following directions, talkativeness, disruptive classroom behavior). Teacher evaluations may also incorporate validated ADHD-specific rating scales, which can help assess core symptom severity and monitor response to treatment.

(Choices A and C) Brain imaging and EEG are not performed routinely in the work-up of ADHD in the absence of other neurological symptoms. They would not be indicated in this patient with no other medical history and a normal physical examination.

(Choice B) A hearing test is not routinely performed in the initial evaluation of ADHD, and hearing impairment would have likely been identified by this age. However, a hearing test should be performed if coexisting hearing impairment is suspected.

(Choice D) A speech and language evaluation would be warranted if the patient had problems with speech articulation/production or his language development was delayed.

(Choice F) Toxicology screening is not routinely performed in the assessment of ADHD. It is less likely to be helpful in the assessment of this patient who lacks any history pointing to medical illness or substance use.

Educational objective:
Diagnosis of attention-deficit hyperactivity disorder requires evidence of inattentive and/or hyperactive/impulsive symptoms for ≥6 months in ≥2 settings (eg, home, school, after-school program). Teacher evaluations can assist in diagnosis.

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A 24-year-old woman calls the office after giving birth to a healthy boy 5 days earlier. She reports feeling "a lot of emotional ups and downs" and says, "I thought I would be thrilled to have a baby, but I feel really disappointed it was not a girl and can't help but cry." The patient gets help from her sister during the day and is able to take naps but is still exhausted due to getting up at night to feed the baby. She says, "I get so worried that I'm not doing things right. I'm breastfeeding, but it's been harder than I thought it would be." The patient has no medical or psychiatric history, and the pregnancy and delivery had no complications. She has no suicidal ideation or thoughts of harming the baby. Which of the following is the most appropriate statement?

- A. "Adjusting to life with a newborn is challenging and takes time, but fortunately your symptoms are normal; please call me if they worsen."
- B. "Being a new mom is challenging, and your symptoms are very common; it's important to give yourself time to adjust to the changes you're going through."
- C. "I'm concerned your symptoms may develop into postpartum depression; would you be interested in talking to a counselor about how you've been feeling?"
- D. "Postpartum hormonal shifts can cause mood changes, but I'd like to talk more about how you're doing; would you be able to come in for an evaluation?"
- E. "Your symptoms are very common after giving birth and should resolve on their own in a few weeks; let's check in again at your 6-week postpartum visit."

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- A. "Adjusting to life with a newborn is challenging and takes time, but fortunately your symptoms are normal; please call me if they worsen." (6%)
- ✗ B. "Being a new mom is challenging, and your symptoms are very common; it's important to give yourself time to adjust to the changes you're going through." (29%)
- C. "I'm concerned your symptoms may develop into postpartum depression; would you be interested in talking to a counselor about how you've been feeling?" (4%)
- ✓ D. "Postpartum hormonal shifts can cause mood changes, but I'd like to talk more about how you're doing; would you be able to come in for an evaluation?" (42%)
- E. "Your symptoms are very common after giving birth and should resolve on their own in a few weeks; let's check in again at your 6-week postpartum visit." (16%)

Incorrect
Correct answer
D

42%
Answered correctly

06 secs
Time Spent

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Version

Explanation

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Postpartum blues, depression & psychosis			
	Postpartum blues	**Postpartum depression**	**Postpartum psychosis**
Prevalence	• 40%-80%	• 8%-15%	• 0.1%-0.2%
Onset	• 2-3 days (resolves within 14 days)	• Typically within 4-6 weeks (can be up to 1 year)	• Days to weeks
Symptoms	• Mild depression, tearfulness, irritability	• ≥2 weeks of moderate to severe depression, sleep, or appetite disturbance; low energy; psychomotor changes; guilt; concentration difficulty; suicidal ideation	• Delusions, hallucinations, thought disorganization, bizarre behavior

This patient with "emotional ups and downs," tearfulness, exhaustion, and self-doubt soon after delivery most likely has the **postpartum blues**, a common but typically **self-limiting** condition. Mild depressive symptoms (eg, intermittent sadness, tearfulness, irritability) typically begin 2-3 days after delivery and resolve within 14 days.

The postpartum blues are usually managed with enhanced psychosocial support and observation. However, **postpartum depression** (ie, major depressive disorder with peripartum onset) shares **overlapping symptoms** (eg, tearfulness, sleep disturbance). In addition, it is common for patients to underreport depressive symptoms due to feelings of inadequacy or shame about fulfilling preconceived maternal roles (eg, "I'm not doing things right"). For these reasons, patients who report mood symptoms soon after delivery **require prompt evaluation** for postpartum depression rather than delaying evaluation until the routine 6-week postpartum visit **(Choice E)**.

An **in-person assessment** is preferable to an evaluation via telephone because meeting face-to-face encourages sharing of sensitive topics (eg, guilt, suicidal ideation) and provides a more controlled and private setting

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An **in-person assessment** is preferable to an evaluation via telephone because meeting face-to-face encourages sharing of sensitive topics (eg, guilt, suicidal ideation) and provides a more controlled and private setting. Therefore, the most appropriate response is to use this phone call to validate the patient's experience (eg, "postpartum hormonal shifts can cause mood changes"), **screen for immediate safety** (eg, thoughts about harming the baby), and **schedule an office visit** as soon as possible. In contrast to this patient, those who disclose suicidal or homicidal ideation require immediate evaluation in the emergency department.

(Choices A and B) It can be helpful to offer reassurance and normalize the postpartum blues (eg, "adjusting to life with a newborn is challenging and takes time," "your symptoms are very common"). However, advising the patient to call if symptoms "worsen" or to give herself "time to adjust" disregards her current struggles and may be perceived as dismissive. In addition, mood changes after delivery should be evaluated in-person given the potential for underreporting of symptoms and undiagnosed postpartum depression.

(Choice C) Patients with postpartum blues are at increased risk for postpartum depression; however, further evaluation and safety screening are required prior to referring to another clinician.

Educational objective:

Postpartum blues is a common, self-limiting condition that begins several days postpartum and resolves within 14

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intermittent sadness, tearfulness, irritability) typically begin 2-3 days after delivery and resolve within 14 days.

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(Choice C) Patients with postpartum blues are at increased risk for postpartum depression; however, further evaluation and safety screening are required prior to referring to another clinician.

Educational objective:
Postpartum blues is a common, self-limiting condition that begins several days postpartum and resolves within 14 days. However, due to underreporting of depressive symptoms and the risk for progression to postpartum depression, patients who report mood symptoms soon after delivery require a prompt in-person evaluation.

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A 6-year-old boy is brought to the office by his mother due to frequent nighttime awakenings. Over the past several months, the patient has had weekly episodes of waking up screaming at night. His mother says, "He seems fine when we're reading his bedtime story, but 1-2 hours after falling asleep, he wakes up shrieking. He looks scared, hyperventilates, and cries. When I try to hug him, he pushes me away and eventually falls back asleep." The mother is concerned that the patient is watching horror movies with his older brother; however, she mentions that the next morning he does not remember his dreams or having awakened. Which of the following is the most likely diagnosis?

- A. Hypnagogic hallucinations
- B. Nightmare disorder
- C. Separation anxiety disorder
- D. Sleep terrors
- E. Specific phobia

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- A. Hypnagogic hallucinations (3%)
- ✗ B. Nightmare disorder (11%)
- C. Separation anxiety disorder (0%)
- ✓ D. Sleep terrors (84%)
- E. Specific phobia (0%)

Incorrect
Correct answer
D

84%
Answered correctly

04 secs
Time Spent

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Version

Explanation

Sleep stages		
	EEG pattern & frequencies	**Characteristics**
Non-REM stage 1 (N1)	• Theta waves (4-7.9 Hz)	• Wakefulness-sleep transition

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Sleep stages		
	EEG pattern & frequencies	**Characteristics**
Non-REM stage 1 (N1)	• Theta waves (4-7.9 Hz)	• Wakefulness-sleep transition • Easy to wake
Non-REM stage 2 (N2)	• Theta waves (4-7.9 Hz) • Sleep spindles & K complexes	• Largest percentage of sleep
Non-REM stage 3 (N3)	• Delta waves (<4 Hz)	• Prominent 1st half of night • Difficult to wake • Sleepwalking & night terrors
REM	• EEG resembles wakefulness • Occasional sawtooth waves	• Prominent 2nd half of night • Dreams, REMs, muscle atonia • REM sleep behavior disorder & nightmare disorder
EEG = electroencephalogram; **REM** = rapid eye movement.		

This child's sudden nighttime awakenings associated with fear, crying, screaming, and inability to be consoled are characteristic of **sleep terrors**. Sleep terrors are a common nonrapid eye movement (NREM) parasomnia in children age 2-12, with a peak incidence at age 5-7. They occur during **slow-wave sleep** in the first half of the night, and the child **does not fully awaken**. There is no associated dream content, and the child typically has **no memory** of the incident in the morning.

Nightmares, in contrast, occur during REM sleep and are associated with dream recall and full awakenings **(Choice B)**. In most cases, sleep terrors in children are benign and resolve spontaneously in 1-2 years without treatment.

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		nightmare disorder

EEG = electroencephalogram; **REM** = rapid eye movement.

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Nightmares, in contrast, occur during REM sleep and are associated with dream recall and full awakenings **(Choice B)**. In most cases, sleep terrors in children are benign and resolve spontaneously in 1-2 years without treatment.

(Choice A) Hypnagogic hallucinations (vivid dreams at sleep onset) are a characteristic feature of narcolepsy, a neurologic disorder that typically presents in adolescence and young adulthood with excessive daytime sleepiness and sudden loss of muscle tone.

(Choice C) Children with separation anxiety disorder fear separation and loss from a major attachment figure. They often prefer to sleep with their parents due to fears of being separated and are consoled by their presence. These children have difficulty falling asleep on their own but do not experience sudden nighttime awakenings.

(Choice E) Specific phobia is characterized by intense fear when exposed to a phobic stimulus (eg, animals, thunderstorms, injections), typically accompanied by avoidant behavior. It would not explain this child's abrupt nighttime awakenings with no recall.

Educational objective:
Sleep terrors are a common and usually benign parasomnia of childhood. They occur during nonrapid eye movement sleep and are characterized by fear, crying, and/or screaming; lack of dream recall; and amnesia of the event.

References

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A 67-year-old woman comes to the office due to difficulty concentrating. She reports repeatedly reading the same page of material due to an inability to focus. She also describes memory problems, stating that it "takes a while to remember another person's name." The patient's medical history is significant for hypertension and type 2 diabetes mellitus. These are well controlled through diet, exercise, and oral medications. She lives alone and describes her mood as "good." Blood pressure is 127/67 mm Hg and pulse is 65/min. The physician decides to administer a brief cognitive test to assess her difficulty in concentrating. Which of the following elements of cognitive testing would best assess for impaired attention and concentration in this patient?

- A. Following a brief 3-step command
- B. Recalling 3 unrelated words after 5 minutes
- C. Reciting months of the year backwards
- D. Remembering past events
- E. Writing a complete sentence

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A 67-year-old woman comes to the office due to difficulty concentrating. She reports repeatedly reading the same page of material due to an inability to focus. She also describes memory problems, stating that it "takes a while to remember another person's name." The patient's medical history is significant for hypertension and type 2 diabetes mellitus. These are well controlled through diet, exercise, and oral medications. She lives alone and describes her mood as "good." Blood pressure is 127/67 mm Hg and pulse is 65/min. The physician decides to administer a brief cognitive test to assess her difficulty in concentrating. Which of the following elements of cognitive testing would best assess for impaired attention and concentration in this patient?

- A. Following a brief 3-step command (22%)
- ✗ B. Recalling 3 unrelated words after 5 minutes (31%)
- ✓ C. Reciting months of the year backwards (43%)
- D. Remembering past events (0%)
- E. Writing a complete sentence (1%)

Incorrect
Correct answer
C

43%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

Cognitive testing & related domains	
Element	**Sample assessment metric**
Orientation	Providing name, location & current date

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Cognitive testing & related domains	
Element	**Sample assessment metric**
Orientation	Providing name, location & current date
Comprehension	Following multistep commands
Concentration	Reciting months of the year backwards
Short-term memory	Recalling 3 unrelated words after 5 minutes
Long-term memory	Providing details of significant life events
Language	Writing a complete sentence with noun-verb agreement
Visual-spatial	Drawing intersecting pentagons
Executive function	Drawing a clock oriented to the time requested

There are several quick clinical tests to **assess attention and concentration** in situations where they may be impaired (eg, dementia, delirium, head injury, depression). These include **counting down from 100** by intervals of 3 or 7, reciting the **months of the year in reverse order**, or spelling **"world" backwards**. Asking a patient to recite the months of the year backwards is often helpful if the patient has a low educational level or is hesitant to perform a task involving math or spelling.

Attention and concentration are tested in the Montreal Cognitive Assessment (MoCA), a widely used screening tool for cognitive impairment. The MoCA also measures time/place orientation, executive function, language, visual-spatial ability, and memory registration and recall. Results must be interpreted with consideration of the patient's education level and existing language, motor, and visual impairments. In order to make a diagnosis of **dementia**

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There are several quick clinical tests to **assess attention and concentration** in situations where they may be impaired (eg, dementia, delirium, head injury, depression). These include **counting down from 100** by intervals of 3 or 7, reciting the **months of the year in reverse order**, or spelling **"world" backwards**. Asking a patient to recite the months of the year backwards is often helpful if the patient has a low educational level or is hesitant to perform a task involving math or spelling.

Attention and concentration are tested in the Montreal Cognitive Assessment (MoCA), a widely used screening tool for cognitive impairment. The MoCA also measures time/place orientation, executive function, language, visual-spatial ability, and memory registration and recall. Results must be interpreted with consideration of the patient's education level and existing language, motor, and visual impairments. In order to make a diagnosis of **dementia**, the patient must demonstrate **impairment in ≥1 cognitive domains** (eg, memory, language, executive function) during testing as well as **functional impairment** in activities of daily living (eg, bathing, shopping, cooking).

(Choice A) Comprehension is tested by asking the patient to follow a multistep command. This usually involves relatively brief tasks such as taking a piece of paper from the examiner, folding it in half, and placing it on the floor. Due to the brevity of these actions, attention and concentration may not be tested effectively.

(Choice B) Memory registration and recall are assessed by asking the patient to repeat aloud the names of 3 unrelated objects and then asking him/her to recall them several minutes later. This would not test attention and concentration effectively, as these are better assessed by tasks requiring prolonged, continuous thinking.

(Choice D) Remote memory is tested by asking patients about the details of significant life events (eg, birth, graduation, marriage dates).

(Choice E) The writing domain of language can be tested by asking the patient to write a sentence containing at least one noun and verb. Oral fluency can be assessed by listening to the patient's spontaneous speech.

Educational objective:
Quick clinical tests to assess attention and concentration include counting down from 100 by intervals of 3 or 7,

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impaired (eg, dementia, delirium, head injury, depression). These include **counting down from 100** by intervals of 3 or 7, reciting the **months of the year in reverse order**, or spelling **"world" backwards**. Asking a patient to recite the months of the year backwards is often helpful if the patient has a low educational level or is hesitant to perform a task involving math or spelling.

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(Choice A) Comprehension is tested by asking the patient to follow a multistep command. This usually involves relatively brief tasks such as taking a piece of paper from the examiner, folding it in half, and placing it on the floor. Due to the brevity of these actions, attention and concentration may not be tested effectively.

(Choice B) Memory registration and recall are assessed by asking the patient to repeat aloud the names of 3 unrelated objects and then asking him/her to recall them several minutes later. This would not test attention and concentration effectively, as these are better assessed by tasks requiring prolonged, continuous thinking.

(Choice D) Remote memory is tested by asking patients about the details of significant life events (eg, birth, graduation, marriage dates).

(Choice E) The writing domain of language can be tested by asking the patient to write a sentence containing at least one noun and verb. Oral fluency can be assessed by listening to the patient's spontaneous speech.

Educational objective:
Quick clinical tests to assess attention and concentration include counting down from 100 by intervals of 3 or 7, reciting the months of the year in reverse order, and spelling "world" backwards.

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A 27-year-old man leaves the men's room of a bar after smoking an unknown substance. He soon becomes disoriented and belligerent. The man displays uncoordinated, jerky movements of his extremities and assaults a bouncer who tries to calm him. When police and emergency medical services personnel arrive, he fights off 4 officers before being restrained and appears immune to pain. In the emergency department, the patient has visual hallucinations, cannot cooperate with the interview, and alternates between agitation and sedation. He is hypertensive and tachycardic, and examination shows vertical nystagmus. The patient does not cooperate with urine toxicology testing. Several hours later, during questioning by the emergency physician, he does not remember most of the preceding events. Which of the following is the primary mechanism of action of the drug most likely used by this patient?

- A. Dopamine receptor antagonism
- B. GABA-A receptor modulation
- C. Mu-opioid receptor agonism
- D. N-methyl-D-aspartate receptor antagonism
- E. Serotonin receptor agonism

Submit

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A 27-year-old man leaves the men's room of a bar after smoking an unknown substance. He soon becomes disoriented and belligerent. The man displays uncoordinated, jerky movements of his extremities and assaults a bouncer who tries to calm him. When police and emergency medical services personnel arrive, he fights off 4 officers before being restrained and appears immune to pain. In the emergency department, the patient has visual hallucinations, cannot cooperate with the interview, and alternates between agitation and sedation. He is hypertensive and tachycardic, and examination shows vertical nystagmus. The patient does not cooperate with urine toxicology testing. Several hours later, during questioning by the emergency physician, he does not remember most of the preceding events. Which of the following is the primary mechanism of action of the drug most likely used by this patient?

- A. Dopamine receptor antagonism (4%)
- ✗ B. GABA-A receptor modulation (6%)
- C. Mu-opioid receptor agonism (7%)
- ✓ D. N-methyl-D-aspartate receptor antagonism (73%)
- E. Serotonin receptor agonism (6%)

Incorrect
Correct answer
D

73%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

This man likely experienced substance-induced psychosis from **phencyclidine (PCP) intoxication**. PCP is a hallucinogen that works primarily as an **N-methyl-D-aspartate (NMDA) glutamate receptor antagonist**. Although the exact mechanism is unknown, it is theorized that NMDA receptor hypofunction increases the risk of

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This man likely experienced substance-induced psychosis from **phencyclidine (PCP) intoxication**. PCP is a hallucinogen that works primarily as an **N-methyl-D-aspartate (NMDA) glutamate receptor antagonist**. Although the exact mechanism is unknown, it is theorized that NMDA receptor hypofunction increases the risk of psychosis partially by causing dopamine dysregulation. Other NMDA receptor antagonists include ketamine and dextromethorphan. PCP can also inhibit the reuptake of norepinephrine, dopamine, and serotonin and affect neuronal sigma receptors.

Moderate amounts of PCP cause **dissociative symptoms**. Agitation, **hallucinations**, and **violent behavior** can occur with higher doses. Fatalities are often associated not with direct PCP intoxication but with related trauma due to combative behavior. In addition to belligerence, PCP is known to cause **loss of coordination**, horizontal and vertical **nystagmus**, and a constellation of cognitive symptoms that includes disorientation, poor judgment, and **memory loss**.

(Choice A) PCP is not a dopamine receptor antagonist. Dopamine receptor antagonism is the mechanism of action of most antipsychotics.

(Choice B) GABA-A receptor modulation is the mechanism of action of benzodiazepines, a drug class with sedative, antianxiety, and anticonvulsant properties. PCP may have some effect on GABA receptors, but this is not its primary mechanism of action.

(Choice C) Mu-opioid receptors are the primary site for the analgesic effects of opioids.

(Choice E) Serotonin receptor agonism is the mechanism of action of triptans, buspirone (an anxiolytic), and many psychedelic drugs (eg, LSD, psilocybin).

Educational objective:
Phencyclidine (PCP) is primarily an N-methyl-D-aspartate receptor antagonist, with lesser effects on the reuptake inhibition of biogenic amines and other receptors. It can have dissociative and anesthetic effects but may also cause psychosis and severe agitation, leading to violent trauma. Ataxia, horizontal and vertical nystagmus, and memory loss can also be present.

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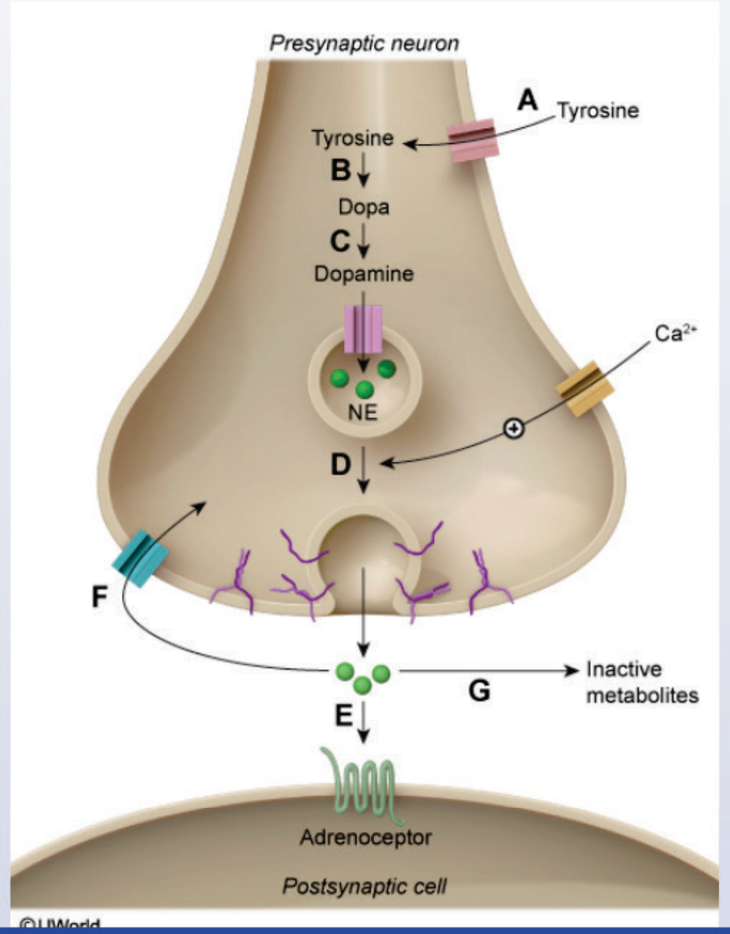
A 32-year-old man is brought to the emergency department by police after an altercation at a local pub. He is agitated and says that his chest hurts. Blood pressure is 170/100 mm Hg and pulse is 130/min and regular. On physical examination, the patient is combative and uncooperative. There are no signs of physical injury. His pupils are dilated and reactive to light. Examination shows nasal perforation. ECG reveals myocardial ischemia. Inhibition of which of the following processes is most likely responsible for this patient's presentation?



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A 32-year-old man is brought to the emergency department by police after an altercation at a local pub. He is agita
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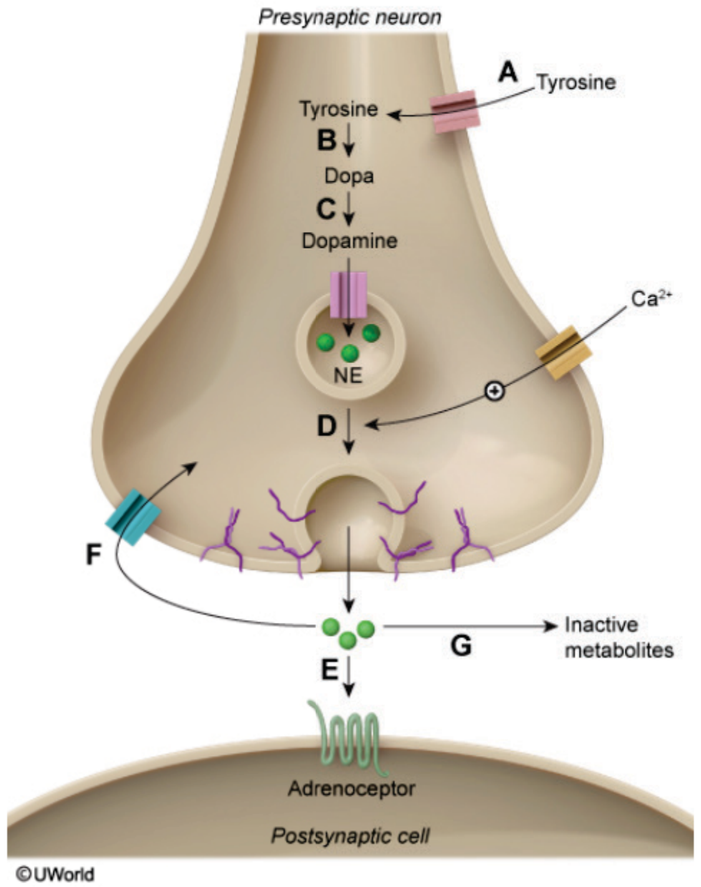

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Postsynaptic cell

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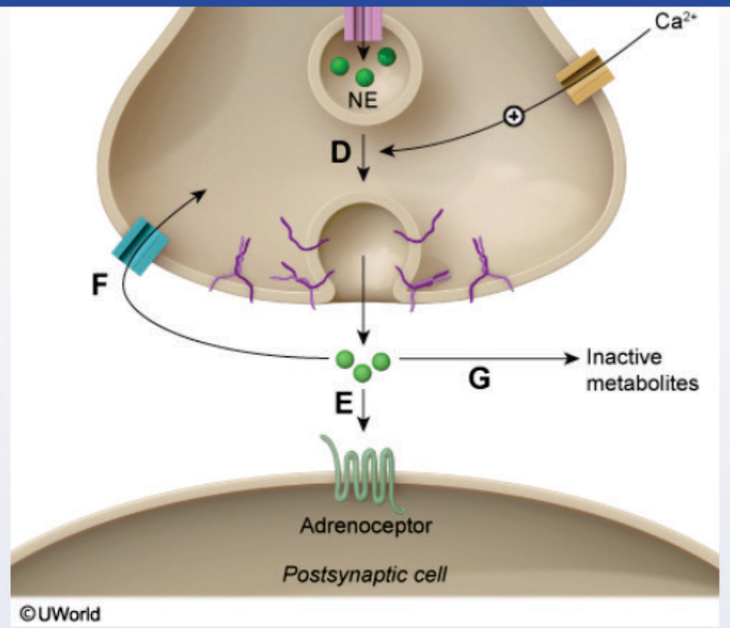

- A. A
- B. B
- C. C
- D. D
- E. E
- F. F
- G. G

Submit

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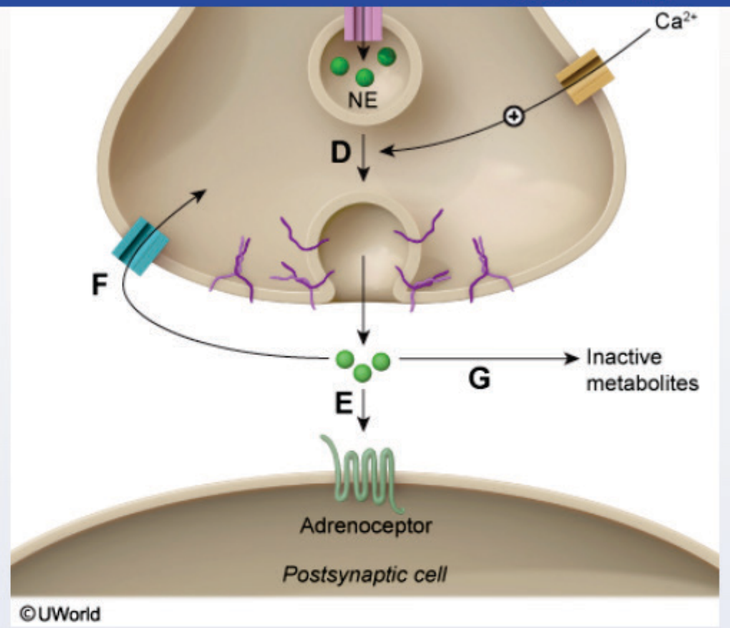

- A. A (0%)
- B. B (0%)
- ✗ C. C (1%)
- D. D (5%)
- E. E (6%)
- ✓ F. F (75%)
- G. G (9%)

Incorrect
Correct answer
F

75%
Answered correctly

12 secs
Time Spent

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Version

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G. G (9%)

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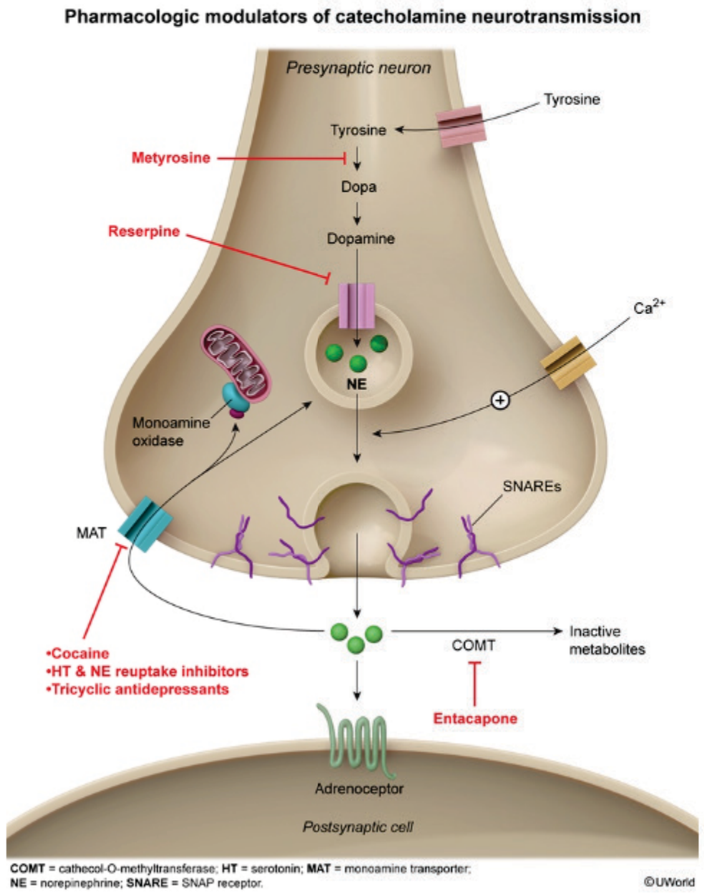

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SNAREs

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reuptake of monoamines (norepinephrine, dopamine, serotonin), resulting in **sympathetic stimulation** (eg, hypertension, tachycardia, light-responsive mydriasis) and CNS activation (eg, increased arousal, euphoria, agitation, seizures).

Cocaine's ability to increase synaptic availability of norepinephrine, combined with some of its other effects (eg, sodium channel antagonism), makes it a potent vasoconstrictor that can promote **myocardial ischemia** by causing **coronary artery vasospasm** and increased platelet aggregation (ie, thrombus formation). When cocaine is used intranasally, its vasoconstrictive effects cause local ischemia resulting in **mucosal atrophy** that can then lead to **nasal septal perforation**; these findings are highly suggestive of cocaine abuse.

(Choices A, D, and E) Inhibition of neuronal tyrosine uptake, impaired norepinephrine release into the synaptic cleft, or blockade of postsynaptic adrenergic receptors would result in sympatholytic effects (reduced blood pressure and heart rate).

(Choice B) Metyrosine blocks the rate-limiting step of catecholamine synthesis (tyrosine hydroxylase). This results in decreased levels of catecholamines and sympatholytic effects.

(Choice C) Reserpine (an antihypertensive agent no longer in clinical use) blocks monoamine entry into presynaptic vesicles, resulting in sympatholytic effects.

(Choice G) Catechol-O-methyl transferase (COMT) is found in the brain and liver and degrades catecholamine neurotransmitters. Entacapone and tolcapone are COMT inhibitors used to prolong the effects of levodopa treatment in patients with Parkinson disease.

Educational objective:
Cocaine is a stimulant that inhibits the presynaptic reuptake of norepinephrine, dopamine, and serotonin. Intoxicated patients develop agitation, tachycardia, hypertension, and light-responsive mydriasis due to increased sympathetic activity. Cocaine is also a potent vasoconstrictor that can cause myocardial ischemia and atrophy of the nasal mucosa and septum.

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A 33-year-old man is hospitalized after neighbors called the police to report that he has been singing loudly and playing the piano "nonstop" all day and night for the last month. The patient says his mood is "terrific," claims he is related to the President, and hears voices telling him he is going to be a famous entertainer. While in the hospital, he makes inappropriate sexual advances toward some of the female nurses. He has a history of 9 psychiatric hospitalizations starting at age 22 for mood and psychotic symptoms. In between hospitalizations, the patient has heard voices commenting on his appearance and has believed that secret cameras have been monitoring him, but he has had no mood symptoms. Which of the following is the most likely diagnosis in this patient?

- A. Bipolar disorder with psychotic features
- B. Delusional disorder
- C. Major depression with psychotic features
- D. Schizoaffective disorder
- E. Schizophrenia
- F. Schizophreniform disorder

Submit

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- A. Bipolar disorder with psychotic features (27%)
- ✗ B. Delusional disorder (3%)
- C. Major depression with psychotic features (0%)
- ✓ D. Schizoaffective disorder (30%)
- E. Schizophrenia (31%)
- F. Schizophreniform disorder (6%)

Incorrect
Correct answer
D

30%
Answered correctly

08 secs
Time Spent

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Explanation

Schizoaffective disorder	
	• Major depressive or manic episode concurrent with symptoms of schizophrenia

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Schizoaffective disorder	
DSM-5 criteria	• Major depressive or manic episode concurrent with symptoms of schizophrenia • Lifetime history of **delusions or hallucinations for ≥2 weeks in the absence of major depressive or manic episode** • Mood episodes are prominent & recur throughout illness • Not due to substances or another medical condition
Differential diagnosis	• **Major depressive or bipolar disorder with psychotic features:** Psychotic symptoms occur exclusively during mood episodes • **Schizophrenia:** Mood symptoms may be present for relatively brief periods

This patient's current symptoms and psychiatric history are consistent with **schizoaffective disorder**. In addition to currently exhibiting symptoms of **mania** (eg, elevated mood, decreased need for sleep, hypersexuality, grandiose delusions), he also has a history of **delusions** and **hallucinations** occurring **in the absence of** a major **mood episode** (ie, psychotic symptoms without mood symptoms in between hospitalizations). A lifetime history of at least 2 weeks of psychotic symptoms in the absence of a mood episode is a key requirement for the schizoaffective disorder diagnosis.

Differentiating schizoaffective disorder from bipolar disorder with psychotic features or major depression with psychotic features requires determining the temporal relationship between psychotic symptoms and mood symptoms. In bipolar disorder and major depression with psychotic features, psychotic symptoms occur exclusively during manic or depressive episodes **(Choices A and C)**; there are no psychotic symptoms outside of mood episodes.

Unlike schizoaffective disorder, a diagnosis of schizophrenia does not include prominent mood symptoms that meet the criteria for manic and/or depressive episodes **(Choice E)**.

(Choice B) Delusional disorder involves ≥1 delusions for at least 1 month in the absence of other psychotic

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Differential diagnosis	symptoms occur exclusively during mood episodes • **Schizophrenia:** Mood symptoms may be present for relatively brief periods

This patient's current symptoms and psychiatric history are consistent with **schizoaffective disorder**. In addition to currently exhibiting symptoms of **mania** (eg, elevated mood, decreased need for sleep, hypersexuality, grandiose delusions), he also has a history of **delusions** and **hallucinations** occurring **in the absence of** a major **mood episode** (ie, psychotic symptoms without mood symptoms in between hospitalizations). A lifetime history of at least 2 weeks of psychotic symptoms in the absence of a mood episode is a key requirement for the schizoaffective disorder diagnosis.

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Unlike schizoaffective disorder, a diagnosis of schizophrenia does not include prominent mood symptoms that meet the criteria for manic and/or depressive episodes **(Choice E)**.

(Choice B) Delusional disorder involves ≥1 delusions for at least 1 month in the absence of other psychotic symptoms (eg, hallucinations, disorganized speech and behavior).

(Choice F) Schizophreniform disorder has the same symptoms as schizophrenia (eg, delusions, hallucinations, disorganized speech and/or behavior, negative symptoms), but the duration is ≥1 month and <6 months.

Educational objective:
For diagnosis of schizoaffective disorder, psychosis must occur in the absence of major mood episodes, but mood episodes must be present for a majority of this lifelong illness. In bipolar disorder and major depression with psychotic features, psychotic symptoms occur exclusively during mood episodes.

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An 83-year-old woman is sent to the emergency department from the nursing home where she resides for evaluation of mental status changes. At baseline, she has mild memory impairment but is otherwise cognitively intact, calm, and cooperative with the nursing home staff. Over the past 24 hours, she has become increasingly combative and agitated and stayed up all night. Behavioral interventions and environmental modifications have not been helpful. The patient's medical conditions include hypertension and a history of anxiety and depression. Temperature is 37.2 C (99 F), blood pressure is 110/80 mm Hg, pulse is 84/min, and respirations are 18/min. Neurological examination is normal, but the patient is unable to attend to the conversation, is mildly disoriented, and cannot state the days of the week backwards. Without provocation, she strikes out at a nurse's aide standing next to her. Laboratory results are normal except for urinalysis, which shows an increased presence of white blood cells and is positive for nitrites. Head CT scan is negative. In addition to starting antibiotic therapy, which of the following medications is most appropriate to treat this patient's behavioral symptoms?

- A. Clozapine
- B. Doxepin
- C. Haloperidol
- D. Lithium
- E. Lorazepam
- F. Temazepam

Submit

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- A. Clozapine (8%)
- ✗ B. Doxepin (6%)
- ✓ C. Haloperidol (47%)
- D. Lithium (5%)
- E. Lorazepam (27%)
- F. Temazepam (4%)

Incorrect
Correct answer
C

47%
Answered correctly

06 secs
Time Spent

2023
Version

Explanation

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Delirium is an acute-onset "confusional state" characterized primarily by **waxing and waning mental status** changes and impaired attention. Disorientation, agitation, psychosis, and sleep disturbances may also occur. Delirium occurs secondary to an underlying medical condition, such as a urinary tract infection, and therefore the primary management is **treating the underlying cause**. The elderly and those with preexisting cognitive disorders are at a higher risk for delirium and may present with varying degrees of agitation.

High-potency, first-generation antipsychotics (eg, **haloperidol**) and some second-generation antipsychotics (eg, quetiapine) can be used for the acute **treatment of agitation and psychosis** associated with delirium. Antipsychotic use is appropriate in the treatment of delirium in the elderly if the patient is at **risk of acute harm** to self or others and behavioral interventions have failed. Under these conditions, the benefits of antipsychotics (ie, the provision of safety) outweigh the potential risks when used at low doses and short durations.

(Choice A) Clozapine is a second-generation antipsychotic that is reserved for patients with treatment-refractory schizophrenia. It is not used for the short-term treatment of agitation in delirium due to the risk of agranulocytosis.

(Choice B) Doxepin is a tricyclic antidepressant with anticholinergic effects that can worsen delirium. It may be used for the treatment of insomnia in other settings.

(Choice D) Lithium is a mood stabilizer. It is not used for the short-term treatment of behavioral dyscontrol in nonmanic patients.

(Choices E and F) Benzodiazepines (eg, lorazepam, temazepam) can worsen confusional states, particularly in the elderly. Benzodiazepines are appropriate only for the treatment of delirium due to alcohol or benzodiazepine withdrawal.

Educational objective:
Delirium may manifest as acute changes in cognition and behavior. When nonpharmacological interventions are ineffective, low-dose antipsychotics (eg, haloperidol) are the medications of choice to treat the behavioral (eg, severe agitation) and psychotic manifestations of delirium.

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A 45-year-old woman comes to the office due to fatigue, weight gain, and insomnia for the past 2 months. The patient has difficulty falling asleep, awakens at 4:00 AM, and stays awake for the rest of the day. She also describes nonspecific muscle aches and pains in her shoulders, neck, and abdomen. She says, "I was always pretty healthy, but now I worry that something is wrong or that I could have cancer." The patient has stopped exercising due to lack of motivation and has lost nearly all interest in spending time with friends or family. She has a history of hypertension, for which she takes hydrochlorothiazide. Physical examination is normal except that blood pressure is slightly higher than usual at 142/88 mm Hg and there has been a weight gain of 2.7 kg (6 lb). The patient admits that she has been forgetful recently, sometimes neglecting to take her medication. Laboratory evaluation, including thyroid function testing, is within normal range. The patient appears tense and anxious. Which of the following is the most likely diagnosis?

- A. Depressive disorder due to another medical condition
- B. Generalized anxiety disorder
- C. Illness anxiety disorder
- D. Major depressive disorder
- E. Somatic symptom disorder

Submit

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- A. Depressive disorder due to another medical condition (11%)
- ✗ B. Generalized anxiety disorder (9%)
- C. Illness anxiety disorder (18%)
- ✓ D. Major depressive disorder (50%)
- E. Somatic symptom disorder (10%)

Incorrect
Correct answer
D

50%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Major depressive disorder

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Major depressive disorder	
Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure): ◦ Depressed mood ◦ Loss of interest or pleasure ◦ Change in appetite or weight ◦ Insomnia or hypersomnia ◦ Psychomotor retardation or agitation ◦ Low energy ◦ Poor concentration or indecisiveness ◦ Thoughts of worthlessness or inappropriate guilt ◦ Recurrent thoughts of death or suicide • No history of mania or hypomania • Not due to substances or another medical condition

This patient's 2-month history of low energy, weight gain, insomnia with early morning awakening, impaired concentration (forgetfulness), and **loss of interest** is most consistent with **major depressive disorder** (MDD). Some individuals with MDD **do not report feeling depressed** due to poor recognition or concerns of stigma and may come to their primary care physicians with excessive **worry over physical health**, pain symptoms (eg, muscle aches, abdominal cramps, headaches), and other **somatic symptoms** (eg, fatigue, sleep disturbance, appetite change). When medical illness has been ruled out, MDD should be considered high in the differential diagnosis of patients with these symptoms.

(Choice A) Some signs and symptoms of MDD are identical to those of a general medical condition (eg, weight loss in cancer, fatigue in hypothyroidism). Depressive disorder due to another medical condition is diagnosed when there is evidence from the history, physical examination, or laboratory tests that the symptoms can be

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	• No history of mania or hypomania • Not due to substances or another medical condition

This patient's 2-month history of low energy, weight gain, insomnia with early morning awakening, impaired concentration (forgetfulness), and **loss of interest** is most consistent with **major depressive disorder** (MDD). Some individuals with MDD **do not report feeling depressed** due to poor recognition or concerns of stigma and may come to their primary care physicians with excessive **worry over physical health**, pain symptoms (eg, muscle aches, abdominal cramps, headaches), and other **somatic symptoms** (eg, fatigue, sleep disturbance, appetite change). When medical illness has been ruled out, MDD should be considered high in the differential diagnosis of patients with these symptoms.

(Choice A) Some signs and symptoms of MDD are identical to those of a general medical condition (eg, weight loss in cancer, fatigue in hypothyroidism). Depressive disorder due to another medical condition is diagnosed when there is evidence from the history, physical examination, or laboratory tests that the symptoms can be entirely explained by the physiologic mechanism of another illness. This patient's unremarkable physical examination and normal laboratory results make MDD more likely.

(Choice B) Patients with MDD can have worry and psychomotor agitation (eg, restlessness, fidgeting); however, generalized anxiety disorder is characterized by multiple worries, not just health anxiety, lasting ≥6 months.

(Choices C and E) Illness anxiety disorder involves an extreme level of worry about having a serious illness, followed by excessive health-related behaviors for ≥6 months. Somatic symptom disorder involves a focus on the seriousness of bodily symptoms with excessive thoughts, anxiety, or energy devoted to them for ≥6 months. Somatic symptoms and related disorders are not diagnosed if they arise only during an acute depressive episode.

Educational objective:
Major depressive disorder can present with loss of interest or pleasure without depressed mood. Patients may seek treatment in the primary care setting for somatic symptoms such as fatigue, sleep disturbance, and pain.

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A 32-year-old woman comes to the emergency department requesting medication for severe back pain. She has tried multiple over-the-counter agents and says that nothing has relieved her pain except oxycodone. The patient was seen in a pain clinic a year ago but cannot recall the name of the physician and says that her prescription has run out. Medical history includes a motor vehicle collision 10 years earlier and obesity. Temperature is 37.1 C (98.8 F), blood pressure is 130/80 mm Hg, pulse is 76/min, and respirations are 16/min. Physical examination shows no abnormalities. A recent MRI was normal. The patient says that her pain level is 10 on a scale of 0-10 and becomes frustrated when the physician suggests nonprescription pain medication. Which of the following is the most appropriate next step by the physician?

- A. Challenge the patient about her drug-seeking behavior
- B. Obtain confirmation of the patient's prescription history
- C. Order a repeat MRI of the spine
- D. Prescribe a 1-week supply of oxycodone
- E. Refer patient to a substance abuse rehabilitation program
- F. Refuse to prescribe opioid medication and recommend nonpharmacologic pain management

Submit

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- A. Challenge the patient about her drug-seeking behavior (4%)
- ✓ B. Obtain confirmation of the patient's prescription history (60%)
- C. Order a repeat MRI of the spine (3%)
- D. Prescribe a 1-week supply of oxycodone (2%)
- E. Refer patient to a substance abuse rehabilitation program (10%)
- F. Refuse to prescribe opioid medication and recommend nonpharmacologic pain management (18%)

Correct

60%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Back pain accompanied by a request for opioid medication is a relatively common occurrence in the emergency department that requires differentiating inadequate pain management from **drug-seeking behavior**. This patient

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Back pain accompanied by a request for opioid medication is a relatively common occurrence in the emergency department that requires differentiating inadequate pain management from **drug-seeking behavior**. This patient exhibits many features concerning for drug-seeking behavior, including **requesting** a **specific medication** by name, **running out** of medication, and claiming **pain out of proportion** to the physical examination. Reporting lost or stolen medication and obtaining multiple opioid prescriptions from different providers are other red flags indicating misuse or diversion.

The best initial approach is to clarify the patient's medication history to determine which drugs have been prescribed, by whom, and at what frequency. State-based, online, prescription drug–monitoring programs are increasingly used in emergency departments to check for undisclosed prescriptions, clarify prescription patterns, and identify patients who obtain prescriptions from multiple providers. By identifying potential opioid misuse, physicians can make more informed decisions regarding pain prescriptions.

(Choice A) It would be inappropriate to challenge the patient prior to clarifying her pattern of medication use.

(Choice C) Repeating an MRI of the spine would not be the next step in a patient with a normal physical examination and recent normal MRI.

(Choices D and F) These are options that can be considered once the patient's history is clarified. If the patient has received opioid prescriptions for a documented diagnosis at appropriately spaced intervals, a limited prescription would be reasonable. If there is evidence of misuse, refusing to prescribe opioid medication would be more appropriate.

(Choice E) This patient does not perceive her opioid use as problematic and would likely be unreceptive to discussing referral to a substance abuse rehabilitation program.

Educational objective:
Physicians have a responsibility to identify signs of potential drug-seeking behavior and prescription drug misuse. This involves being alert to red flags (eg, lost or stolen medication, pain inconsistent with physical examination) and attempting to clarify medication history by using prescription drug–monitoring programs or other information

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department that requires differentiating inadequate pain management from **drug-seeking behavior**. This patient exhibits many features concerning for drug-seeking behavior, including **requesting** a **specific medication** by name, **running out** of medication, and claiming **pain out of proportion** to the physical examination. Reporting lost or stolen medication and obtaining multiple opioid prescriptions from different providers are other red flags indicating misuse or diversion.

The best initial approach is to clarify the patient's medication history to determine which drugs have been prescribed, by whom, and at what frequency. State-based, online, prescription drug–monitoring programs are increasingly used in emergency departments to check for undisclosed prescriptions, clarify prescription patterns, and identify patients who obtain prescriptions from multiple providers. By identifying potential opioid misuse, physicians can make more informed decisions regarding pain prescriptions.

(Choice A) It would be inappropriate to challenge the patient prior to clarifying her pattern of medication use.

(Choice C) Repeating an MRI of the spine would not be the next step in a patient with a normal physical examination and recent normal MRI.

(Choices D and F) These are options that can be considered once the patient's history is clarified. If the patient has received opioid prescriptions for a documented diagnosis at appropriately spaced intervals, a limited prescription would be reasonable. If there is evidence of misuse, refusing to prescribe opioid medication would be more appropriate.

(Choice E) This patient does not perceive her opioid use as problematic and would likely be unreceptive to discussing referral to a substance abuse rehabilitation program.

Educational objective:
Physicians have a responsibility to identify signs of potential drug-seeking behavior and prescription drug misuse. This involves being alert to red flags (eg, lost or stolen medication, pain inconsistent with physical examination) and attempting to clarify medication history by using prescription drug–monitoring programs or other information sources.

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A 28-year-old medical student comes to the office due to anxiety and trouble concentrating. He has worked part-time as a volunteer firefighter and reports that he has been struggling to concentrate in class ever since witnessing a child who had been badly burnt pulled out of a house fire 3 weeks ago. On two occasions the patient began to sweat, shake, and have trouble breathing: "I felt like my head was spinning and had to run out of the classroom to catch my breath." He also reports having trouble sleeping, being irritable with friends and family, and occasionally feeling like he is in a dream. The patient says, "Sometimes I'll be sitting in class, and I suddenly feel like I am back in the burning house. I can smell the fire and see the child." He has missed almost half of his classes to avoid being in crowded classrooms and has recently quit his volunteer job. Which of the following is the most likely diagnosis?

- A. Acute stress disorder
- B. Adjustment disorder
- C. Agoraphobia
- D. Depersonalization/derealization disorder
- E. Panic disorder
- F. Post-traumatic stress disorder

Submit

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- ✓ A. Acute stress disorder (59%)
- ✗ B. Adjustment disorder (0%)
- C. Agoraphobia (0%)
- D. Depersonalization/derealization disorder (1%)
- E. Panic disorder (1%)
- F. Post-traumatic stress disorder (36%)

Incorrect
Correct answer
A

59%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Acute stress disorder

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Acute stress disorder	
Clinical features	• Exposure to actual or threatened trauma • Intrusive memories, nightmares, flashbacks with intense psychological/physiological reactions • Amnesia for event, detachment, avoidance of reminders • Negative mood • Dissociative symptoms • Arousal with sleep disturbance, irritability, hypervigilance, exaggerated startle, impaired concentration • **Lasting ≥3 days & ≤1 month**

This patient's intrusive **flashbacks**, arousal (ie, panic-like symptoms, sleep disturbance, irritability), **avoidance** of returning to his volunteer work, and **derealization** (feeling detached from his surroundings) lasting for 3 weeks after experiencing a life-threatening event are suggestive of **acute stress disorder (ASD)**. **Nightmares** of the event, depressed mood, difficulty concentrating, decreased interest in activities, and **hypervigilance** are also common. Reminders of the event, such as being in an enclosed or crowded space, can result in anxiety or panic and lead to avoidance. This often results in significant functional impairment.

In ASD, symptoms usually develop directly following the trauma and last from 3 days to **1 month**, after which they can resolve or develop into more chronic symptoms. When symptoms persist for more than 1 month, the diagnosis is changed to post-traumatic stress disorder **(Choice F)**.

(Choice B) The precipitating incidents in adjustment disorders are typically common stressors rather than life-threatening traumas. Adjustment disorders are also not diagnosed when symptoms meet the criteria for another, more specific disorder, such as ASD.

(Choice C) In agoraphobia, patients avoid situations where escape may not be possible or help may not be

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returning to his volunteer work, and **derealization** (feeling detached from his surroundings) lasting for 3 weeks after experiencing a life-threatening event are suggestive of **acute stress disorder (ASD)**. **Nightmares** of the event, depressed mood, difficulty concentrating, decreased interest in activities, and **hypervigilance** are also common. Reminders of the event, such as being in an enclosed or crowded space, can result in anxiety or panic and lead to avoidance. This often results in significant functional impairment.

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(Choice B) The precipitating incidents in adjustment disorders are typically common stressors rather than life-threatening traumas. Adjustment disorders are also not diagnosed when symptoms meet the criteria for another, more specific disorder, such as ASD.

(Choice C) In agoraphobia, patients avoid situations where escape may not be possible or help may not be available if panic or other embarrassing symptoms occur. This patient's avoidance is secondary to a traumatic event, and his symptoms better meet criteria for ASD.

(Choice D) Dissociative symptoms such as depersonalization (detachment from self) or derealization (detachment from surroundings) commonly occur as part of the symptom cluster in ASD. Depersonalization/derealization disorder is not diagnosed separately if the patient meets criteria for ASD.

(Choice E) Panic disorder is associated with recurrent panic attacks that occur without a clear precipitant. This patient's panic symptoms are related to his recent trauma.

Educational objective:
Acute stress disorder is characterized by intrusive experiences (flashbacks, nightmares), arousal (poor concentration, restless sleep), dissociative symptoms, and avoidance of traumatic reminders, as well as mood disturbances in response to a life-threatening trauma. Symptoms last between 3 days and 1 month.

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A 28-year-old man is brought to the emergency department by his roommate, who is concerned about his change in behavior over the past 2 weeks. The roommate describes the patient as "a regular guy who is usually very responsible." Last week, the patient abruptly quit his job as a computer programmer and started placing large bets on an online gambling site because he was "sure to make millions." The roommate says that the patient has been staying up most nights scribbling notes for his autobiography on small scraps of paper. The patient says, "My new mission is to spread understanding." He denies any alcohol or drug use, which his roommate affirms. This patient is most likely to exhibit which of the following additional findings?

- A. Flat affect
- B. Low self-esteem
- C. Poor hygiene
- D. Pressured speech
- E. Psychomotor slowing
- F. Social withdrawal
- G. Thought blocking

Submit

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- A. Flat affect (4%)
- ✗ B. Low self-esteem (0%)
- C. Poor hygiene (5%)
- ✓ D. Pressured speech (82%)
- E. Psychomotor slowing (0%)
- F. Social withdrawal (3%)
- G. Thought blocking (2%)

Incorrect
Correct answer
D

82%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Manic episode

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Manic episode	
Clinical features	• ≥1 week of elevated or irritable mood & increased energy/activity • ≥3 of the following symptoms (4 if mood is irritable only) (**DIGFAST** mnemonic): ◦ **Distractibility** ◦ **Impulsivity**/indiscretion, risky behavior ◦ **Grandiosity** ◦ **Flight of ideas**/racing thoughts ◦ Increased **activity**/psychomotor agitation ◦ Decreased need for **sleep** ◦ **Talkativeness**/pressured speech
Severity	• Impaired psychosocial function • May have psychotic features (hallucinations, delusions) • May require hospitalization

This patient's **grandiose ideas** about his special mission, impulsive **risk-taking behavior**, and **decreased need for sleep** lasting ≥1 week are suggestive of a **manic episode** consistent with bipolar I disorder. Other features of mania include **elevated/euphoric/irritable mood**, increased energy, and hyperactivity. Increased production, volume, and rate of speech (ie, **pressured speech**) and a sense that one's thoughts are moving very quickly (ie, **racing thoughts**) are also common.

Diagnosis of bipolar I disorder requires ≥1 manic episodes, although most bipolar patients will experience both major depressive and manic episodes in their lifetime. Manic episodes can occur with or without psychotic features (eg, delusions, hallucinations). Pharmacotherapy for acute mania includes mood stabilizers such as lithium and valproate and second-generation antipsychotics (eg, risperidone).

(Choices A, C, and G) Flat affect (ie, reduced emotional expressiveness), decreased attention to personal

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Severity	• Impaired psychosocial function • May have psychotic features (hallucinations, delusions) • May require hospitalization

This patient's **grandiose ideas** about his special mission, impulsive **risk-taking behavior**, and **decreased need for sleep** lasting ≥1 week are suggestive of a **manic episode** consistent with bipolar I disorder. Other features of mania include **elevated/euphoric/irritable mood**, increased energy, and hyperactivity. Increased production, volume, and rate of speech (ie, **pressured speech**) and a sense that one's thoughts are moving very quickly (ie, **racing thoughts**) are also common.

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(Choices A, C, and G) Flat affect (ie, reduced emotional expressiveness), decreased attention to personal hygiene, and thought blocking (ie, sudden inability to finish a thought) are findings typical of schizophrenia. In contrast, patients with bipolar disorder exhibit intense and labile affect, increased thought productivity, and pressured speech. These patients may wear garish clothing and makeup but typically do not neglect their hygiene.

(Choices B, E, and F) Low self-esteem, psychomotor slowing (ie, slow speech and movements), and social withdrawal are more typical of a major depressive episode. Patients in a manic episode are typically grandiose or overconfident, physically restless and hyperactive, and expansive (eg, overly friendly and eager to talk to strangers).

Educational objective:
Manic episodes are characterized by euphoric/irritable mood, impulsivity, hyperactivity, decreased need for sleep, pressured speech, racing thoughts, and grandiosity. They may occur with or without psychotic features.

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A 23-year-old woman comes to the office describing restlessness in her legs and inability to lie or sit still. The patient was diagnosed with schizophrenia a month ago and medication therapy was initiated. Her dose was increased after 2 weeks. She says, "I haven't heard any voices since a few days after the medication was increased." Blood pressure is 140/90 mm Hg and pulse is 90/min. The patient is alert, oriented, fidgety, and anxious. Which of the following is the most likely diagnosis in this patient?

- A. Acute dystonia
- B. Akathisia
- C. Drug-induced parkinsonism
- D. Neuroleptic malignant syndrome
- E. Psychotic agitation
- F. Tardive dyskinesia

Submit

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- A. Acute dystonia (6%)
- ✓ B. Akathisia (71%)
- C. Drug-induced parkinsonism (7%)
- D. Neuroleptic malignant syndrome (2%)
- E. Psychotic agitation (3%)
- F. Tardive dyskinesia (8%)

Correct

71%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Important antipsychotic side effects	
Extrapyramidal side effects	• Acute dystonic reaction: sudden-onset, sustained muscle contractions • Akathisia: subjective restlessness with inability to sit still • Drug-induced parkinsonism: tremor, rigidity, bradykinesia, masked facies

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Important antipsychotic side effects	
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Tardive dyskinesia	• Involuntary movements after chronic use (eg, lip smacking, choreoathetoid movements)
Neuroleptic malignant syndrome	• Fever, rigidity, mental status changes, autonomic instability

This patient is experiencing **akathisia**, a type of extrapyramidal side effect associated with antipsychotic treatment. Akathisia ranges from mild subjective feelings of tension to marked physical restlessness (which can be extremely distressing for patients). It typically presents days to weeks after initiating antipsychotic treatment or increasing the dose. Patients describe an inability to sit or stand in one position and may pace frequently or demonstrate other restless behaviors. Treatment options include decreasing the antipsychotic dose (if feasible) or treating with a beta blocker or benzodiazepines.

(Choice A) Acute dystonia is an extrapyramidal side effect characterized by acute onset of involuntary muscle contraction of the neck, mouth, tongue, or eye muscles. It occurs within hours to days of antipsychotic use, especially with rapid dose escalation of high-potency, first-generation antipsychotics (eg, haloperidol), and is treated with anticholinergic medication (eg, diphenhydramine, benztropine).

(Choice C) Drug-induced parkinsonism is an extrapyramidal side effect that presents with cogwheel rigidity, masked facies, bradykinesia, tremor, and decreased arm swing. Treatment is usually with anticholinergics (eg, benztropine).

(Choice D) Neuroleptic malignant syndrome is an acute, potentially fatal reaction to antipsychotic medications.

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increasing the dose. Patients describe an inability to sit or stand in one position and may pace frequently or demonstrate other restless behaviors. Treatment options include decreasing the antipsychotic dose (if feasible) or treating with a beta blocker or benzodiazepines.

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(Choice D) Neuroleptic malignant syndrome is an acute, potentially fatal reaction to antipsychotic medications. Patients have hyperthermia, sympathetic hyperactivity (eg, tachycardia, diaphoresis), severe "lead pipe" rigidity, and altered mental status.

(Choice E) This patient reports that her auditory hallucinations have resolved and shows no other signs of psychosis. The physical restlessness of akathisia may be mistaken for psychotic agitation. It is important to differentiate the two etiologies as increasing the antipsychotic dose will further exacerbate akathisia.

(Choice F) Tardive dyskinesia is an involuntary and potentially irreversible movement disorder due to prolonged antipsychotic exposure (typically years). Characteristic movements include lip smacking, biting, grimacing, tongue protrusions, and choreoathetoid movements of the head, limbs, and trunk.

Educational objective:
Akathisia is an extrapyramidal side effect of antipsychotic medication characterized by inner restlessness and an inability to sit or stand in one position. Treatment involves a reduction in the antipsychotic dose, if possible, or the addition of a beta blocker or benzodiazepine.

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A 37-year-old man is admitted to the hospital for right lower-lobe pneumonia. He is given antibiotics, and his shortness of breath and fever improve by the second hospital day. However, he now has new-onset abdominal pain, diarrhea, and severe muscle aches. The patient has no history of gastrointestinal conditions or prior surgeries. Temperature is 36.8 C (98.2 F), blood pressure is 124/80 mm Hg, and pulse is 88/min. On examination, the patient appears uncomfortable and anxious. Pupils are dilated and there is prominent lacrimation. Abdominal examination reveals hyperactive bowel sounds without tenderness or distension. Which of the following is the most likely diagnosis?

- A. Adverse effect of antibiotic
- B. Alcohol withdrawal
- C. Amphetamine intoxication
- D. Benzodiazepine withdrawal
- E. Cocaine intoxication
- F. Nicotine withdrawal
- G. Opioid withdrawal

Submit

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- C. Amphetamine intoxication
- D. Benzodiazepine withdrawal
- E. Cocaine intoxication
- F. Nicotine withdrawal
- ✓ G. Opioid withdrawal

Incorrect
Correct answer
G

Collecting Statistics

05 secs
Time Spent

2023
Version

Explanation

Common withdrawal syndromes		

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Common withdrawal syndromes

Substance	Symptoms	Examination findings
Alcohol	Tremors, agitation, anxiety, delirium, psychosis	Seizures, tachycardia, palpitations
Benzodiazepines	Tremors, anxiety, perceptual disturbances, psychosis, insomnia	
Opioids	Nausea, vomiting, abdominal cramping, diarrhea, muscle aches	Dilated pupils, yawning, piloerection, lacrimation, hyperactive bowel sounds
Stimulants (eg, cocaine, amphetamines)	Increased appetite, hypersomnia, intense psychomotor retardation, severe depression ("crash")	No significant findings
Nicotine	Dysphoria, irritability, anxiety, increased appetite	
Cannabis	Irritability, anxiety, depressed mood, insomnia, decreased	No significant findings

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Cannabis	Irritability, anxiety, depressed mood, insomnia, decreased appetite	No significant findings

This patient is experiencing the classic symptoms of **opioid withdrawal**. Opioid withdrawal can start as soon as 6

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This patient is experiencing the classic symptoms of **opioid withdrawal**. Opioid withdrawal can start as soon as 6-12 hours after cessation of a short-acting opioid such as heroin and usually peaks within 24-48 hours. Symptoms include nausea, vomiting, **diarrhea**, abdominal cramping, and myalgia. It is generally nonlife-threatening and vital signs are usually normal. **Dilated pupils**, prominent piloerection, and **hyperactive bowel sounds** are seen on examination. Opioid withdrawal can appear similar to other withdrawal or intoxication syndromes, but certain findings, including **lacrimation** and **yawning**, are fairly specific.

Individuals who have been taking chronic prescription opioids, such as cancer patients, can also develop opioid withdrawal on abrupt discontinuation or marked reduction in usage.

(Choice A) Antibiotic use may be associated with diarrhea and other adverse effects. However, this patient's relatively specific signs of opioid withdrawal (eg, lacrimation) make opioid withdrawal more likely.

(Choices B and D) Alcohol and benzodiazepine withdrawal are two of the few potentially fatal drug withdrawal syndromes. Symptoms of alcohol withdrawal typically begin after 12-24 hours and are typified by autonomic hyperactivity (eg, tremors, agitation, diaphoresis, tachycardia, hypertension). Onset of benzodiazepine withdrawal depends on the half-life of the specific agent and is characterized by tremors, anxiety, perceptual disturbances, dysphoria, and psychosis. Alcohol and benzodiazepine withdrawal may also lead to seizures.

(Choices C and E) Amphetamine and cocaine intoxication are marked by euphoria, increased vigilance, psychomotor agitation, tachycardia, hypertension, and hyperthermia. As in opioid *withdrawal*, pupils are dilated with stimulant *intoxication*. However, this patient's gastrointestinal upset and lacrimation are more typical of opioid withdrawal.

(Choice F) Nicotine withdrawal is commonly seen in the inpatient setting in chronic tobacco users. Besides cravings for cigarettes, symptoms are generally mild and include dysphoria, irritability, anxiety, and increased appetite/weight gain.

Educational objective:

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12 hours after cessation of a short-acting opioid such as heroin and usually peaks within 24-48 hours. Symptoms include nausea, vomiting, **diarrhea**, abdominal cramping, and myalgia. It is generally nonlife-threatening and vital signs are usually normal. **Dilated pupils**, prominent piloerection, and **hyperactive bowel sounds** are seen on examination. Opioid withdrawal can appear similar to other withdrawal or intoxication syndromes, but certain findings, including **lacrimation** and **yawning**, are fairly specific.

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(Choice F) Nicotine withdrawal is commonly seen in the inpatient setting in chronic tobacco users. Besides cravings for cigarettes, symptoms are generally mild and include dysphoria, irritability, anxiety, and increased appetite/weight gain.

Educational objective:
Opioid withdrawal is marked by mydriasis, abdominal pain, diarrhea, piloerection, lacrimation, and yawning. It is generally nonlife-threatening, unlike withdrawal from alcohol and benzodiazepines.

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A 54-year-old man comes to the office due to concerns about having pancreatic cancer after a coworker died of the disease 6 months ago. The patient has no epigastric pain, jaundice, or weight loss. However, he worries constantly because in researching the illness he read that it may not have obvious symptoms in early stages and can be rapidly fatal. The patient saw another physician 2 months ago, who performed a physical examination, laboratory evaluation, and abdominal CT scan. The results were normal and the physician reassured the patient that he did not have cancer. However, the patient reports that he has noticed occasional stomach noises after eating and would like to have additional testing done. Which of the following is the most likely diagnosis?

- A. Adjustment disorder with anxiety
- B. Conversion disorder
- C. Delusional disorder (somatic subtype)
- D. Factitious disorder
- E. Generalized anxiety disorder
- F. Illness anxiety disorder
- G. Somatic symptom disorder

Submit

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- A. Adjustment disorder with anxiety (1%)
- ✗ B. Conversion disorder (1%)
- C. Delusional disorder (somatic subtype) (1%)
- D. Factitious disorder (2%)
- E. Generalized anxiety disorder (0%)
- ✓ F. Illness anxiety disorder (86%)
- G. Somatic symptom disorder (6%)

Incorrect
Correct answer
F

86%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Key features of somatic symptom & related disorders

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Key features of somatic symptom & related disorders	
Somatic symptom disorder	≥1 unexplained symptoms; excessive thoughts, anxiety & behaviors in response to symptoms
Illness anxiety disorder	Minimal to no symptoms; preoccupation with idea of having a serious illness
Conversion disorder (functional neurologic symptom disorder)	Neurologic symptom(s) incompatible with anatomy or pathophysiology
Factitious disorder	Falsification of symptoms/inducing injury in the absence of obvious external rewards
Malingering	Falsification of illness for obvious external rewards

This patient's excessive worry about having pancreatic cancer despite negative medical evaluation is consistent with **illness anxiety disorder** (IAD, [hypochondriasis]). Patients with IAD are preoccupied with **fears** of having a **serious**, **undiagnosed illness** and are rarely reassured by negative findings on physical examination or laboratory testing. Their fears of illness often become a dominant feature of their lives and lead to **high health care utilization** (eg, doctor shopping, requests for repeated testing). These patients often have catastrophic interpretations of normal physical sensations (eg, this patient thinking that stomach noises could signify cancer).

IAD is differentiated from somatic symptom disorder in that patients with IAD have **minimal or no somatic symptoms**. In contrast, patients with somatic symptom disorder have prominent and typically multiple somatic symptoms **(Choice G)**. Initial management of IAD consists of scheduling regular visits, limiting diagnostic tests and referrals, and focusing on coping and functional improvement.

(Choice A) Although this patient's anxiety about pancreatic cancer was triggered by his coworker's death, adjustment disorder is not diagnosed when symptoms are better explained by another disorder.

(Choice B) Conversion disorder (functional neurologic symptom disorder) is characterized by neurologic

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This patient's excessive worry about having pancreatic cancer despite negative medical evaluation is consistent with **illness anxiety disorder** (IAD, [hypochondriasis]). Patients with IAD are preoccupied with **fears** of having a **serious**, **undiagnosed illness** and are rarely reassured by negative findings on physical examination or laboratory testing. Their fears of illness often become a dominant feature of their lives and lead to **high health care utilization** (eg, doctor shopping, requests for repeated testing). These patients often have catastrophic interpretations of normal physical sensations (eg, this patient thinking that stomach noises could signify cancer).

IAD is differentiated from somatic symptom disorder in that patients with IAD have **minimal or no somatic symptoms**. In contrast, patients with somatic symptom disorder have prominent and typically multiple somatic symptoms **(Choice G)**. Initial management of IAD consists of scheduling regular visits, limiting diagnostic tests and referrals, and focusing on coping and functional improvement.

(Choice A) Although this patient's anxiety about pancreatic cancer was triggered by his coworker's death, adjustment disorder is not diagnosed when symptoms are better explained by another disorder.

(Choice B) Conversion disorder (functional neurologic symptom disorder) is characterized by neurologic symptoms (eg, weakness, nonepileptic seizures) that are inconsistent with any known condition.

(Choice C) Patients with IAD are not delusional and can acknowledge the possibility that they do not have the disease. In contrast, patients with delusional disorder, somatic type, have false, fixed beliefs about the body.

(Choice D) Factitious disorder involves the intentional falsification of illness with the goal of assuming the sick role.

(Choice E) This patient's anxiety appears to be restricted to fears of having a serious illness. Patients with generalized anxiety disorder worry excessively about multiple everyday issues (eg, relationships, work, finances), not just health anxiety.

Educational objective:
Illness anxiety disorder is characterized by excessive concern about having a serious, undiagnosed disease,

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serious, **undiagnosed illness** and are rarely reassured by negative findings on physical examination or laboratory testing. Their fears of illness often become a dominant feature of their lives and lead to **high health care utilization** (eg, doctor shopping, requests for repeated testing). These patients often have catastrophic interpretations of normal physical sensations (eg, this patient thinking that stomach noises could signify cancer).

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(Choice D) Factitious disorder involves the intentional falsification of illness with the goal of assuming the sick role.

(Choice E) This patient's anxiety appears to be restricted to fears of having a serious illness. Patients with generalized anxiety disorder worry excessively about multiple everyday issues (eg, relationships, work, finances), not just health anxiety.

Educational objective:
Illness anxiety disorder is characterized by excessive concern about having a serious, undiagnosed disease, despite few or no symptoms and negative medical workup.

References

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A 25-year-old graduate student comes to the office for evaluation of anxiety. She describes episodes of sudden-onset palpitations, shortness of breath, and diaphoresis during which she wants to "run away before anyone notices." The patient arrives early for her classes to get a seat close to the door and has left during lectures due to feeling "out of control." There are no specific triggers for these events, but she is worried about having another episode next week during her final examinations. She does not drink alcohol or use illicit drugs. Physical examination, ECG, and laboratory evaluation are normal. The patient is diagnosed with panic disorder. After discussion of treatment options, she decides to pursue cognitive-behavioral therapy and start a short-term anxiolytic medication that also has muscle-relaxant and anticonvulsant properties. Which of the following best describes the mechanism of action of this medication?

- A. Antagonism at GABA A benzodiazepine receptor sites
- B. Increased duration of chloride channel opening
- C. Increased frequency of chloride channel opening
- D. Inhibition of serotonin and norepinephrine reuptake
- E. Inhibition of serotonin reuptake

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A 25-year-old graduate student comes to the office for evaluation of anxiety. She describes episodes of sudden-onset palpitations, shortness of breath, and diaphoresis during which she wants to "run away before anyone notices." The patient arrives early for her classes to get a seat close to the door and has left during lectures due to feeling "out of control." There are no specific triggers for these events, but she is worried about having another episode next week during her final examinations. She does not drink alcohol or use illicit drugs. Physical examination, ECG, and laboratory evaluation are normal. The patient is diagnosed with panic disorder. After discussion of treatment options, she decides to pursue cognitive-behavioral therapy and start a short-term anxiolytic medication that also has muscle-relaxant and anticonvulsant properties. Which of the following best describes the mechanism of action of this medication?

- A. Antagonism at GABA A benzodiazepine receptor sites (8%)
- ✕ B. Increased duration of chloride channel opening (18%)
- ✓ C. Increased frequency of chloride channel opening (67%)
- D. Inhibition of serotonin and norepinephrine reuptake (3%)
- E. Inhibition of serotonin reuptake (2%)

Incorrect
Correct answer
C

67%
Answered correctly

34 secs
Time Spent

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Explanation

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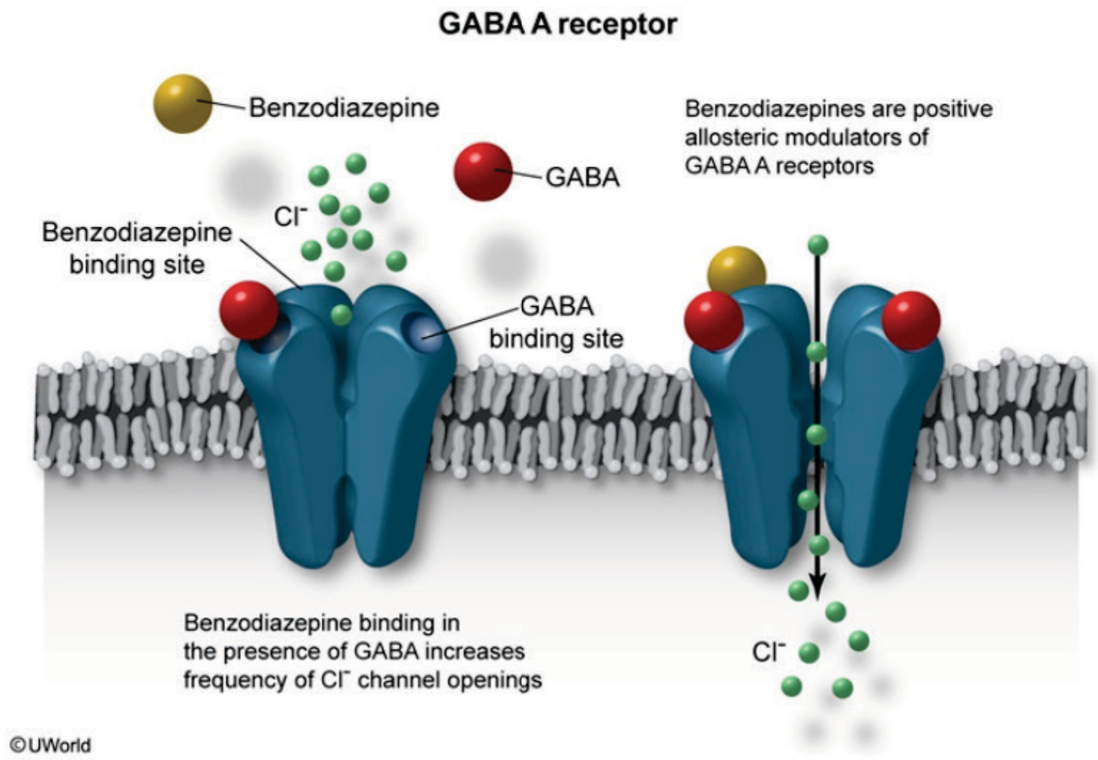
describes the mechanism of action of this medication?

Exhibit Display



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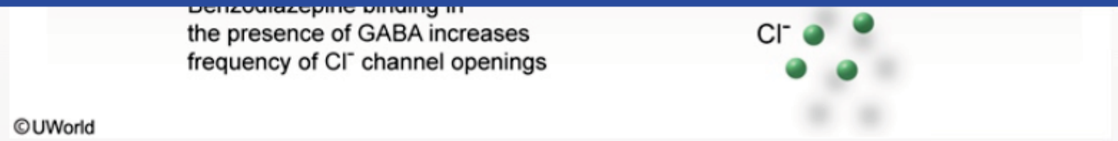

Benzodiazepines (eg, clonazepam, lorazepam) bind and modulate **$GABA_A$ receptors** on CNS neurons, resulting in an **increased frequency** of **chloride channel opening** in the presence of GABA. This increase in chloride permeability hyperpolarizes and stabilizes the membrane, rendering it less excitable, resulting in the anxiolytic, muscle-relaxant, and anticonvulsant properties of benzodiazepines. Due to risk for dependence, benzodiazepines are generally prescribed for short-term use in anxiety disorders and alcohol withdrawal syndrome.

(Choice A) Flumazenil is an antagonist at benzodiazepine receptor sites on GABA A receptors and is a reversal agent for benzodiazepine overdose.

(Choice B) Barbiturates (eg, phenobarbital) increase the duration of opening of the GABA A receptor–chloride channel in the presence of GABA. Although barbiturates have anxiolytic properties, they are not indicated for the treatment of anxiety disorders because of their potential to induce fatal respiratory depression.

(Choices D and E) Inhibition of serotonin reuptake is the mechanism of action of selective serotonin reuptake inhibitors (eg, fluoxetine). Inhibition of serotonin and norepinephrine reuptake is the mechanism of tricyclic antidepressants (eg, amitriptyline) and serotonin–norepinephrine reuptake inhibitors (eg, venlafaxine). These antidepressants are frequently used to treat panic disorder, but they take several weeks for symptom improvement. Unlike benzodiazepines, they do not have muscle relaxant or anticonvulsant properties.

Educational objective:
Benzodiazepines bind GABA A receptors, resulting in an increased frequency of chloride channel opening in the presence of GABA. Indications for prescribing include short-term treatment of anxiety disorders and alcohol withdrawal syndrome.

References

- Benzodiazepines I: upping the care on downers: the evidence of risks, benefits and alternatives.

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A 12-year-old girl is brought to the office for an annual checkup. The mother expresses concern about her daughter's behavior and poor grades, and says, "She is stubborn, irritable, overly emotional, and doesn't listen. She also seems resentful of her twin brother and deliberately annoys or upsets him. I can't get her to do chores or her homework, or go to bed on time." Over the past year, the mother has been called several times by the school guidance counselor about her daughter talking back to teachers and skipping classes. The patient says that school is "boring" and blames her behavior on "pointless rules and unreasonable demands," saying that her teachers are all "stupid." Which of the following is the most likely diagnosis in this patient?

- A. Antisocial personality disorder
- B. Attention-deficit hyperactivity disorder
- C. Conduct disorder
- D. Disruptive mood dysregulation disorder
- E. Normal adolescent behavior
- F. Oppositional defiant disorder

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- A. Antisocial personality disorder (1%)
- ✗ B. Attention-deficit hyperactivity disorder (3%)
- C. Conduct disorder (14%)
- D. Disruptive mood dysregulation disorder (3%)
- E. Normal adolescent behavior (14%)
- ✓ F. Oppositional defiant disorder (61%)

Incorrect
Correct answer
F

61%
Answered correctly

18 secs
Time Spent

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Explanation

Clinical features of oppositional defiant disorder
Pattern of angry/irritable mood, argumentative/defiant behavior,

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B. Attention-deficit hyperactivity disorder (3%)

Exhibit Display

Clinical features of oppositional defiant disorder

Pattern of angry/irritable mood, argumentative/defiant behavior, or vindictiveness for ≥6 months

- Argues with adults, defies authority figures, refuses to follow rules
- Deliberately annoys others
- Blames others for own mistakes or misbehavior
- Easily annoyed, angered, resentful, or vindictive
- Not due to another mental disorder

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on others and being **angry**, **argumentative** or resentful are also characteristic of the disorder. Although the behavior often manifests with family members, it must also be observed during interactions with other individuals

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This patient's pattern of deliberately annoying behavior and defiance of rules and authority figures that causes problems at home and at school suggests a diagnosis of **oppositional defiant disorder** (ODD). Blaming failures on others and being **angry**, **argumentative** or resentful are also characteristic of the disorder. Although the behavior often manifests with family members, it must also be observed during interactions with other individuals.

For diagnosis, the oppositional behaviors must be excessive in frequency and duration when compared to normative age-appropriate behaviors. Although adolescents may test boundaries and assert their independence, this patient's 1-year history of persistent **defiance**, skipping classes, repeated refusal to follow rules, and **irritable** mood are beyond what would be expected for a 12-year-old girl **(Choice E)**.

(Choice A) Antisocial personality disorder is characterized by a pattern of disregard for and violation of the rights of others and is not diagnosed in individuals age <18.

(Choice B) Although attention-deficit hyperactivity disorder (ADHD) is commonly comorbid with ODD, this patient does not exhibit characteristic inattentive and hyperactive symptoms. Children with ODD should be assessed and treated for comorbid ADHD and learning disorders.

(Choice C) ODD should be differentiated from conduct disorder, in which the problematic behaviors are more severe and aggressive. This patient does not exhibit destruction of property, physical aggression or cruelty toward people or animals, or the typical pattern of stealing or deceit seen in conduct disorder.

(Choice D) In disruptive mood dysregulation disorder, patients also present with irritable mood. However, this is accompanied by repetitive temper outbursts (verbal or physical) that are out of proportion to the stimulus and inconsistent with developmental level. Symptoms should manifest prior to age 10.

Educational objective:
Oppositional defiant disorder is a behavioral disorder of childhood characterized by argumentative and defiant behavior toward authority figures. It does not involve the more severe violations of the basic rights of others seen in conduct disorder.

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A 12-year-old boy is brought to the office due to behavioral problems. His parents are upset about his poor grades and recent school suspension for setting fires in the locker room and stealing another student's cell phone. They say that the boy has always been impulsive, had a lot of energy, and become angry and argumentative easily, but over the past year his aggressive behavior "has gotten out of control." The patient says that the fires were an "accident," although he admits to being angry at the coach for kicking him off the basketball team. Regarding the theft, he jokingly says, "People deserve to have their phones stolen when they are stupid enough to leave them in plain sight." The patient has a history of getting into trouble for talking back to teachers, skipping class, and getting into fights since the fourth grade. He has no medical history. There is a family history of bipolar disorder and alcohol dependence. The patient smokes cigarettes occasionally but denies illicit drug or alcohol use. Which of the following is the most likely diagnosis in this patient?

- A. Antisocial personality disorder
- B. Attention-deficit hyperactivity disorder
- C. Conduct disorder
- D. Intermittent explosive disorder
- E. Oppositional defiant disorder
- F. Pyromania

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- A. Antisocial personality disorder (8%)
- ✗ B. Attention-deficit hyperactivity disorder (1%)
- ✓ C. Conduct disorder (78%)
- D. Intermittent explosive disorder (0%)
- E. Oppositional defiant disorder (10%)
- F. Pyromania (0%)

Incorrect
Correct answer
C

78%
Answered correctly

06 secs
Time Spent

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Explanation

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Conduct disorder	
Clinical features	• Pattern of violating major societal norms or rights of others over the previous 12 months • Aggression & cruelty toward people & animals • Destruction of property, setting fires • Serious violation of rules (truancy, running away) • Deceitfulness &/or theft (lying, stealing)

This patient's history of fire setting, stealing, and aggressive behavior is most likely explained by **conduct disorder**. Conduct disorder is a psychiatric disorder of children and adolescents and is characterized by a pattern of behaviors that **violate major societal norms** or the **rights of others**. Other behaviors seen in conduct disorder include bullying, frequent physical fights, using weapons (eg, bat, gun, knife), torturing animals, breaking into houses, and sexual coercion. Conduct disorder generally presents in middle childhood to adolescence and is more common in boys. Children with conduct disorder are at greater risk for developing antisocial personality disorder as adults.

(Choice A) Antisocial personality disorder is not diagnosed in individuals under age 18. It involves a pattern of violation of basic societal rules and the rights of others and requires a history of some symptoms of conduct disorder before age 15.

(Choice B) This patient does not have enough inattentive and hyperactive symptoms to diagnose attention-deficit hyperactivity disorder, and his overall behavior is more characteristic of conduct disorder.

(Choice D) Aggression occurs in both conduct and intermittent explosive disorders. However, in intermittent explosive disorder, aggression is not premeditated or committed to achieve a tangible objective (eg, money, power, intimidation). This disorder would not explain this patient's stealing and fire setting.

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(Choice E) Oppositional defiant disorder (ODD) involves a pattern of angry/irritable mood and argumentative/defiant behavior toward authority figures. Symptoms of ODD are less severe than those of conduct disorder. ODD does not include physical aggression, stealing, or destruction of property, as seen in this patient.

(Choice F) Pyromania is characterized by intentional and repeated fire setting with no obvious motive; it does not involve other behaviors seen in conduct disorder (eg, lying, theft, cruelty to others). A separate diagnosis of pyromania is not given when fire setting occurs as part of conduct disorder.

Educational objective:
Conduct disorder involves a persistent pattern of violating major societal norms or the rights of others. Behaviors include aggression toward people and animals, deceitfulness or theft, destruction of property, and serious violation

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disorder. Conduct disorder is a psychiatric disorder of children and adolescents and is characterized by a pattern of behaviors that **violate major societal norms** or the **rights of others**. Other behaviors seen in conduct disorder include bullying, frequent physical fights, using weapons (eg, bat, gun, knife), torturing animals, breaking into houses, and sexual coercion. Conduct disorder generally presents in middle childhood to adolescence and is more common in boys. Children with conduct disorder are at greater risk for developing antisocial personality disorder as adults.

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Educational objective:
Conduct disorder involves a persistent pattern of violating major societal norms or the rights of others. Behaviors include aggression toward people and animals, deceitfulness or theft, destruction of property, and serious violation of rules.

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A 48-year-old man begins psychotherapy due to depression and escalating conflicts with his boss. He makes progress in the therapy sessions and reports feeling less depressed. The patient has also gained insight into how his father was rarely available to him while growing up and recently told his father, "I am angry that you were never there for me." The following week, the psychiatrist unexpectedly cancels a session to attend to an emergency. At the next appointment, the patient says, "I feel as if you are not interested in listening to me, like I am not your priority." Which of the following is the most likely explanation of this patient's attitude toward his psychiatrist?

- A. Acting out
- B. Displacement
- C. Projection
- D. Reaction formation
- E. Regression
- F. Transference

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- A. Acting out (2%)
- ✗ B. Displacement (22%)
- C. Projection (14%)
- D. Reaction formation (3%)
- E. Regression (1%)
- ✓ F. Transference (55%)

Incorrect
Correct answer
F

55%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Transference is the unconscious **shifting** of **emotions** or desires associated with a **person from the past** to another **person in the present**. Transference emotions often originate from feelings toward early significant figures, particularly parents. When the psychiatrist cancels the session unexpectedly, the patient's negative childhood experiences with his unavailable father are activated and unconsciously brought into the present with the

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Transference can be positive or negative and frequently affects doctor-patient relationships (both psychiatric and nonpsychiatric). Positive transference plays a role in patients trusting their physicians as many patients have a positive expectation that doctors are compassionate caregivers (similar to their parents). Patients who were abused as children sometimes have difficulty seeking care or complying with the care they receive due to negative expectations of being taken advantage of or being harmed by a caregiving figure.

(Choice A) In acting out, unconscious feelings or impulses are expressed through actions (eg, if this patient had impulsively broken items in the psychiatrist's office due to rage at his perceived abandonment).

(Choice B) In displacement, a person expresses unacceptable feelings intended for one person to a more neutral person or object (eg, if this patient did not express his anger to his father and instead berated the psychiatrist). Because the patient disclosed his anger to his father directly, he would not be using displacement.

(Choice C) Projection involves misattributing one's own unacceptable feelings to another person (eg, if the patient were unable to acknowledge his disappointment toward his psychiatrist about canceling and instead perceived his psychiatrist as being upset with him).

(Choice D) In reaction formation, uncomfortable feelings are transformed into their opposites (eg, if this patient expressed deep appreciation for the psychiatrist's care rather than acknowledging his disappointment).

(Choice E) Regression is a defense mechanism in which an individual returns to an earlier level of functioning to alleviate psychological distress (eg, if the patient sulked and refused to speak rather than maturely discussing his feelings with the psychiatrist).

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(Choice E) Regression is a defense mechanism in which an individual returns to an earlier level of functioning to alleviate psychological distress (eg, if the patient sulked and refused to speak rather than maturely discussing his feelings with the psychiatrist).

Educational objective:
Transference is the unconscious shifting of emotions associated with a significant person from one's past to a person in the present.

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A 55-year-old, previously healthy man is brought to the office by his wife after being forced into early retirement due to poor work performance. The patient was a financial planner but began missing important deadlines and mismanaging his client's accounts 6 months ago. He became more irritable during this time and started to curse at and insult his coworkers when they expressed concern about his performance. The patient has also become verbally abusive toward his wife but appears indifferent to the hurt he causes. She has had to take over the finances and grocery shopping. She adds, "My husband has developed quite the sweet tooth. He eats almost two boxes of cookies a day now." Physical examination is unremarkable. This patient is most likely to have which of the following neuropathologic findings?

- A. Aggregations of phosphorylated tau protein
- B. Cytoplasm inclusions with alpha synuclein
- C. Cytosolic vacuolation of neurons and glia with prion inclusions
- D. Extracellular deposition of beta-amyloid
- E. Intracellular deposition of presenilin

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- ✓ A. Aggregations of phosphorylated tau protein (48%)
- ✗ B. Cytoplasm inclusions with alpha synuclein (21%)
- C. Cytosolic vacuolation of neurons and glia with prion inclusions (16%)
- D. Extracellular deposition of beta-amyloid (5%)
- E. Intracellular deposition of presenilin (8%)

Incorrect
Correct answer
A

48%
Answered correctly

04 secs
Time Spent

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Explanation

Comparison of frontotemporal dementia & Alzheimer disease		
Criteria	**Frontotemporal dementia**	**Alzheimer disease**

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Comparison of frontotemporal dementia & Alzheimer disease		
Criteria	**Frontotemporal dementia**	**Alzheimer disease**
Macroscopic examination	• Pronounced atrophy of frontal & temporal lobes	• Mild-to-moderate generalized brain atrophy
Onset	• Early (50s & 60s)	• 60s & 70s or older
Microscopic features	• Initial neuronal loss in the frontotemporal lobes • Tau protein inclusions (eg, neurofibrillary tangles, Pick bodies) • TDP-43 protein inclusions	• Initial neuronal loss in parietal & temporal lobes • Neurofibrillary tangles with tau protein • Amyloid plaques
Initial symptoms	• Personality & behavioral changes (eg, apathy, socially inappropriate behavior)	• Prominent memory impairment
Genetic basis	• Autosomal dominant inheritance in 20%-40% of cases	• Chromosome 21 (APP gene) • Apolipoprotein E4

This patient with impaired executive function (eg, poor work performance) most likely has **frontotemporal dementia** (FTD), a type of early-onset dementia characterized by prominent behavioral changes. These can include:

- **Disinhibition:** socially inappropriate behavior (eg, cursing at coworkers)
- **Apathy/loss of empathy:** loss of interest in activities and/or impaired social relationships (eg, indifference toward being verbally abusive)

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- **Disinhibition:** socially inappropriate behavior (eg, cursing at coworkers)
- **Apathy/loss of empathy:** loss of interest in activities and/or impaired social relationships (eg, indifference toward being verbally abusive)
- **Hyperorality:** changes in diet, often with a preference for sweets; more severe manifestations include binge eating (eg, eating 2 boxes of cookies per day) or consuming inedible objects
- **Compulsive behaviors:** may include simple (eg, repetitive speech or motions) or complex (eg, hoarding, following a new religion) behaviors

FTD is characterized by degeneration of the prefrontal cortex, progressing to include the anterior temporal lobes. Neuropathologic features often overlap with other neurodegenerative conditions and may include:

- **Aggregations of phosphorylated tau protein:** Tau is a protein associated with neuronal microtubules, and it normally takes part in microtubule stabilization. In patients with FTD, tau becomes hyperphosphorylated and disassociates from the microtubules, which may lead to instability and disrupted axonal transport. Phosphorylated tau aggregates to form inclusions that can appear as neurofibrillary tangles (similar to those seen in Alzheimer disease) or round inclusions (ie, Pick bodies).
- **Abnormal TDP-43 protein inclusions:** TDP-43 is a protein involved in DNA repair and transcription, and it becomes abnormally ubiquitinated in FTD. Pathologic TDP-43 is also found in patients with amyotrophic lateral sclerosis.

(Choice B) Cytoplasm inclusions with alpha synuclein are characteristic of dementia with Lewy bodies, which is characterized by visual hallucinations, parkinsonism, cognitive fluctuations, and REM sleep behavior disorder.

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- **Aggregations of phosphorylated tau protein:** Tau is a protein associated with neuronal microtubules, and it normally takes part in microtubule stabilization. In patients with FTD, tau becomes hyperphosphorylated and disassociates from the microtubules, which may lead to instability and disrupted axonal transport. Phosphorylated tau aggregates to form inclusions that can appear as neurofibrillary tangles (similar to those seen in Alzheimer disease) or round inclusions (ie, Pick bodies).
- **Abnormal TDP-43 protein inclusions:** TDP-43 is a protein involved in DNA repair and transcription, and it becomes abnormally ubiquitinated in FTD. Pathologic TDP-43 is also found in patients with amyotrophic lateral sclerosis.

(Choice B) Cytoplasm inclusions with alpha synuclein are characteristic of dementia with Lewy bodies, which is characterized by visual hallucinations, parkinsonism, cognitive fluctuations, and REM sleep behavior disorder.

(Choice C) Cytosolic vacuolation of neurons and glia with prion inclusions are seen in patients with Creutzfeldt-Jakob disease, a prion disease. Although behavioral changes are common, dementia is rapidly progressive and associated with myoclonus and/or seizures.

(Choices D and E) Presenilin is a component of the gamma-secretase complex, which is involved in cleavage of the amyloid precursor protein (APP). Abnormal cleavage of APP leads to increased beta amyloid deposition that is commonly seen in patients with Alzheimer dementia. Alzheimer dementia commonly presents with early and prominent memory impairment with language deficits and spatial disorientation. Although personality changes can occur, they typically present later in the disease process.

Educational objective:
Frontotemporal dementia presents with early personality change, executive dysfunction, compulsivity, and hyperorality. Neuropathologic findings include neurofibrillary tangles due to abnormal tau proteins (also seen in Alzheimer dementia) and pathologically ubiquitinated TDP-43 (also seen in amyotrophic lateral sclerosis).

References

- Frontotemporal dementia

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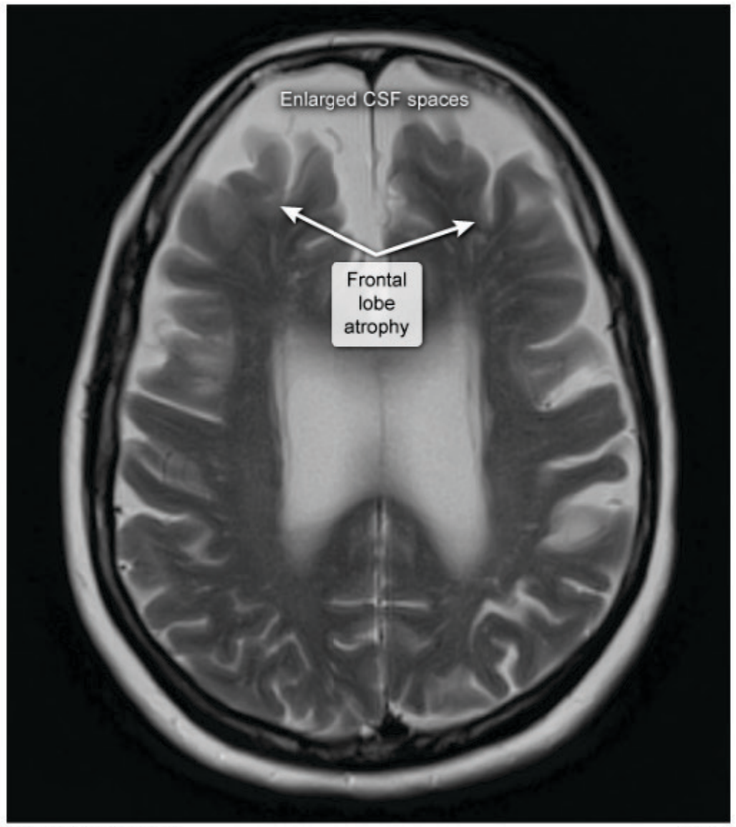
Jakob disease, a prion disease. Although behavioral changes are common, dementia is rapidly progressive and associated with myoclonus and/or seizures.

Exhibit Display

Frontotemporal dementia



CSF = cerebrospinal fluid.

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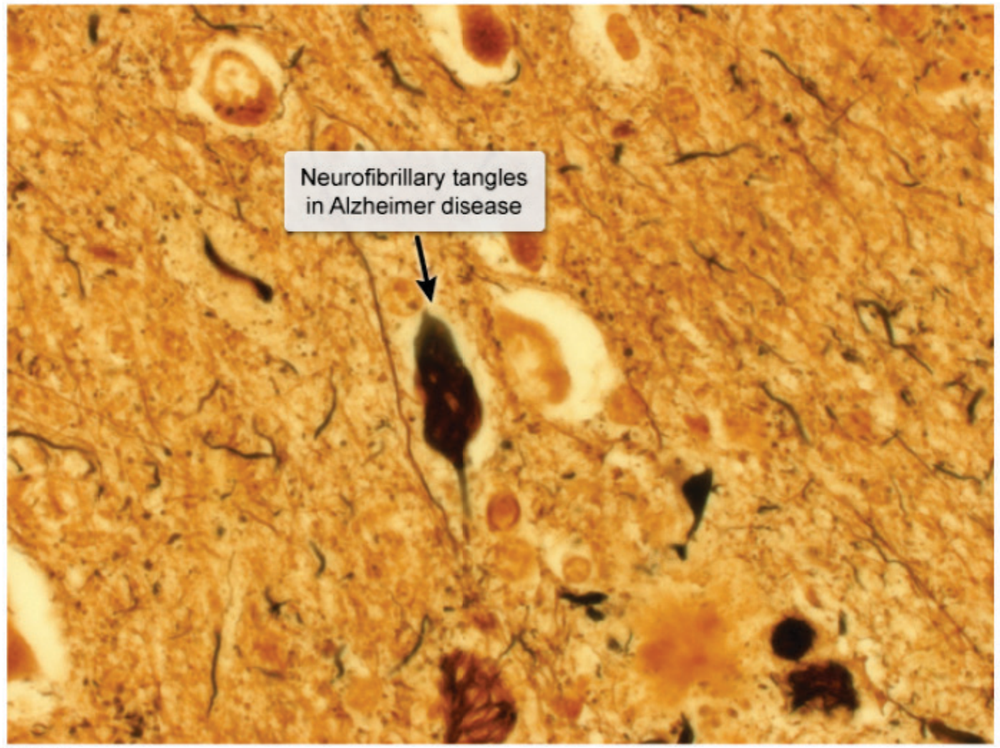
Jakob disease, a prion disease. Although behavioral changes are common, dementia is rapidly progressive and associated with myoclonus and/or seizures.

Exhibit Display

Alzheimer disease



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A 3-year-old boy is brought to the office for a well-child visit. His mother reports that, apart from an ear infection last year, he is in good health. The child started preschool this year. He plays with other children and often copies what they are doing but does not play "make believe" like his older sister. The patient knows his age and sex and can speak in 3-word sentences. He can ride a tricycle but cannot hop on one foot. The patient cannot use a spoon or fork and enjoys eating with his hands. He scribbles spontaneously but cannot copy a circle. Which of the following developmental milestones is likely delayed in this patient?

- A. Cognitive
- B. Fine motor
- C. Gross motor
- D. Language
- E. Social

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- C. Gross motor
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Explanation

Developmental milestones of toddlers				
Age	**Gross motor**	**Fine motor**	**Language**	**Social/cognitive**
1 year	• Pulls to stand	• Pincer grasp	• Says "mama" or "dada"	• Plays "pat-a-cake"

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Developmental milestones of toddlers				
Age	**Gross motor**	**Fine motor**	**Language**	**Social/cognitive**
1 year	• Pulls to stand • Cruises	• Pincer grasp	• Says "mama" or "dada" • Understands "no"	• Plays "pat-a-cake" • Looks for hidden object
15 months	• Takes a few steps	• Stacks 2 blocks	• Says 1 or 2 words (plus "mama" & "dada")	• Follows 1-step command with gesture • Points to get something • Shows affection
18 months	• Walks easily • Climbs on/off chair	• Scribbles • Feeds with fingers	• Says ≥3 words (plus "mama" & "dada")	• Follows 1-step command without gesture • Imitates
2 years	• Runs • Kicks ball • Walks up stairs	• Uses spoon	• Says 2-word phrases	• Knows 2 body parts • Parallel play
30 months	• Jumps	• Removes clothes	• Says ≥50 words	• Follows 2-step command

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			• Understands "no"	hidden object
15 months	• Takes a few steps	• Stacks 2 blocks	• Says 1 or 2 words (plus "mama" & "dada")	• Follows 1-step command with gesture • Points to get something • Shows affection
18 months	• Walks easily • Climbs on/off chair	• Scribbles • Feeds with fingers	• Says ≥3 words (plus "mama" & "dada")	• Follows 1-step command without gesture • Imitates
2 years	• Runs • Kicks ball • Walks up stairs	• Uses spoon	• Says 2-word phrases	• Knows 2 body parts • Parallel play
30 months	• Jumps	• Removes clothes • Turns pages	• Says ≥50 words	• Follows 2-step command • Knows 1 color
3 years	• Walks up stairs alternating feet • Rides tricycle	• Dresses with help • Uses fork • Copies circle	• Says ≥3-word sentences • Speech 75% intelligible	• Knows age/sex • Plays with other children

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3 years	alternating feet • Rides tricycle	• Uses fork • Copies circle	sentences • Speech 75% intelligible	age/sex • Plays with other children

Developmental milestones are specific skills that are **achieved by 75%** of children at a given age. They are divided into categories, including gross motor, fine motor, language, cognitive, and social behavior. It is important for practitioners to assess these milestones during routine well-child examinations to ensure the child is progressing as expected. Failure to reach several milestones by the appropriate age, or a marked delay in one area, requires further evaluation.

Typical gross motor milestones achieved by most 3-year-olds include the ability to ride a tricycle and walk up the stairs with alternating feet; in contrast, the ability to hop on one foot is not expected until age 5 **(Choice C)**. A 3-year-old should also be able to speak in simple sentences containing at least 3 words and know their age and sex, as seen in this patient **(Choices A and D)**. Moreover, instead of playing alongside peers (ie, parallel play), which is typical of children age 2, 3-year-olds interact more with their peers and learn by copying the actions of other children; this patient's social interactions are normal for his age, and imaginative play ("make-believe") is not expected until age 4 **(Choice E)**.

The concerning feature in this patient's history is his **delay in fine motor** milestones. At age 3, he should have the fine motor skills to **copy a circle**, put on some clothing items (eg, loose-fitting pants, jacket), and **use utensils**. This patient cannot use a fork or spoon or copy a circle and should undergo additional evaluation.

Educational objective:
By age 3, a child is expected to ride a tricycle, play with others, and speak in simple sentences. Fine motor milestones for this age include the ability to copy a circle, help dress oneself, and use utensils.

References

- Developmental delay: when and how to screen.

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A 45-year-old woman with a history of opioid use disorder and HIV infection is brought to the emergency department due to worsening lethargy. The patient receives methadone maintenance therapy, which she recently restarted after being hospitalized for an HIV-related infection. Her infection improved after inpatient treatment, and she continues to take appropriate antimicrobials as an outpatient. Her current temperature is 37 C (98.6 F), blood pressure is 116/68 mm Hg, pulse is 90/min, and respirations are 10/min. On physical examination, the patient is somnolent and withdraws all extremities to painful stimuli. The pupils are small and sluggish to react. Brain imaging reveals no new findings, and renal function tests are within normal limits. Use of which of the following medications most likely contributed to this patient's current condition?

- A. Atovaquone
- B. Dapsone
- C. Fluconazole
- D. Rifampin
- E. Valganciclovir

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- A. Atovaquone (4%)
- ✗ B. Dapsone (11%)
- ✓ C. Fluconazole (54%)
- D. Rifampin (20%)
- E. Valganciclovir (9%)

Incorrect
Correct answer
C

54%
Answered correctly

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Explanation

Common medications that increase methadone effect
• Fluconazole, voriconazole, ketoconazole • Ciprofloxacin, clarithromycin

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Common medications that increase methadone effect
• Fluconazole, voriconazole, ketoconazole • Ciprofloxacin, clarithromycin • Cimetidine • Fluvoxamine

Methadone is a **mu-opioid receptor agonist** used for maintenance treatment of opioid use disorder. It has a long half-life, which allows it to effectively suppress cravings and withdrawal symptoms. Like all opioid medications, methadone carries a risk of **overdose**, which is characterized by somnolence, miosis, and respiratory depression (ie, bradypnea). Another side effect is QTc prolongation, which can predispose to torsade de pointes.

Methadone is **extensively metabolized** by the cytochrome P-450 system, particularly by **CYP3A4**. In this case, the patient likely received **fluconazole**, an antifungal medication that is used in the treatment of **cryptococcal meningitis** (which typically occurs in patients with a CD4 count <100 cells/μL). Fluconazole **inhibits** CYP3A4, which can **increase** plasma **methadone concentration** and lead to opioid toxicity. Interestingly, not all P-450 3A4 inhibitors prolong methadone effects; other medications known to cause similar interactions with methadone include voriconazole, ketoconazole, ciprofloxacin, clarithromycin, cimetidine, and fluvoxamine.

(Choices A and B) Atovaquone and dapsone are alternative agents used to prevent pneumocystis pneumonia in patients with trimethoprim-sulfamethoxazole allergy. Common side effects of dapsone include hemolytic anemia and methemoglobinemia, particularly in patients with glucose-6-phosphate dehydrogenase deficiency. Neither medication has significant interactions with methadone.

(Choice D) Rifampin is used (in combination with other antibiotics) in the treatment of multiple mycobacterial infections (eg, tuberculosis, mycobacterium avium complex). It is a cytochrome P-450 inducer and can result in lower plasma concentrations of methadone, thereby decreasing its effects.

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(Choice E) Valganciclovir is used for treatment and secondary prophylaxis of cytomegalovirus retinitis. Side effects include bone marrow suppression and diarrhea. It does not interact with methadone.

Educational objective:
Methadone is a mu-opioid receptor agonist used for maintenance treatment for opioid use disorder; it is metabolized by the cytochrome P-450 system, particularly by CYP3A4. Certain inhibitors of CYP3A4 (eg, azoles, fluvoxamine, ciprofloxacin, clarithromycin, cimetidine) can increase plasma methadone concentration and lead to opioid toxicity (eg, sedation, respiratory depression, miosis).

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A 42-year-old man is brought to the hospital after a motor vehicle collision. The patient was driving while intoxicated with alcohol and collided with another car. Evaluation reveals a left tibia and fibula fracture but no other major injuries. He reports no prior medical conditions. The patient is hospitalized and operative repair of the fracture is performed. On the third day in the hospital, he becomes agitated and demands to leave. Temperature is 37.2 C (99 F), blood pressure is 162/94 mm Hg, and pulse is 125/min. On physical examination, the patient is diaphoretic, tremulous, and disoriented. There are mild hand tremors but no other neurologic abnormalities. Increased activity of which of the following central nervous system receptors is the most likely cause of this patient's condition?

- A. GABA A receptor
- B. NMDA glutamate receptor
- C. Alpha-2 adrenergic receptor
- D. Opioid mu receptor
- E. Serotonin receptor

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- A. GABA A receptor (31%)
- ✓ B. NMDA glutamate receptor (49%)
- C. Alpha-2 adrenergic receptor (6%)
- D. Opioid mu receptor (4%)
- E. Serotonin receptor (8%)

Correct

49%
Answered correctly

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Explanation

This patient is agitated, disoriented, and tremulous with autonomic hyperactivity (eg, hypertension, tachycardia). Development of these symptoms after a period of forced abstinence (ie, admission to the hospital) is consistent with **alcohol withdrawal**, particularly in patients with known problematic alcohol use.

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This patient is agitated, disoriented, and tremulous with autonomic hyperactivity (eg, hypertension, tachycardia). Development of these symptoms after a period of forced abstinence (ie, admission to the hospital) is consistent with **alcohol withdrawal**, particularly in patients with known problematic alcohol use.

Alcohol is a strong CNS depressant that binds to the GABA A receptor complex, enhancing the inhibitory action of GABA (the major inhibitory neurotransmitter in the brain), leading to sedation. **Chronic ethanol use** causes compensatory **downregulation of GABA A receptors** in an attempt to maintain CNS homeostasis. In addition to its effects on GABA neurotransmission, alcohol also inhibits excitatory NMDA glutamate receptors in the brain; similar to GABA receptors, chronic exposure leads to compensatory **upregulation of NMDA receptors**.

Abrupt cessation of alcohol use leads to significantly **decreased GABA activity** due to the decreased number of GABA A receptors **(Choice A)** and **increased glutamate activity** due to the increased number of NMDA receptors, resulting in **CNS overexcitation** and the symptoms of alcohol withdrawal.

(Choice C) Increased activity of alpha-2 adrenergic receptors in the CNS decreases sympathetic output and results in peripheral vasodilation, decreased heart rate, and reduced blood pressure.

(Choice D) Increased activation of the opioid mu receptor occurs with opioid intoxication. It would lead to somnolence with shallow breathing and a decreased respiratory rate. Bradycardia, rather than tachycardia, would be expected.

(Choice E) Serotonin syndrome is caused by overactivation of 5-HT receptors. Although it also results in increased sympathetic activity, it is caused by use of serotonergic agents (eg, SSRIs) rather than alcohol use.

Educational objective:
Chronic alcohol use downregulates inhibitory GABA receptors and upregulates excitatory NMDA glutamate receptors. Therefore, sudden cessation of alcohol leads to decreased GABA activity and increased glutamate activity, resulting in CNS overexcitation (eg, agitation, disorientation, tremulousness, autonomic hyperactivity).

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A 27-year-old man is brought to the emergency department by his roommate, who found the patient barricading himself in a closet at home and saying, "They're coming to get me. No one can be trusted." The patient was laid off from his job and broke up with his girlfriend last month. He has heard voices threatening to kill him a few times daily for the past 2 weeks. He has no medical or psychiatric history and does not use alcohol or illicit drugs. Physical examination and laboratory results are unremarkable. On mental status examination, the patient is fearful and tense. He describes being followed by men in black cars who are spying on him. Which of the following is the most likely diagnosis in this patient?

- A. Acute stress disorder
- B. Bipolar disorder with psychotic features
- C. Brief psychotic disorder
- D. Delusional disorder
- E. Paranoid personality disorder
- F. Schizophrenia
- G. Schizophreniform disorder
- H. Schizotypal personality disorder

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- A. Acute stress disorder (1%)
- ✗ B. Bipolar disorder with psychotic features (0%)
- ✓ C. Brief psychotic disorder (64%)
- D. Delusional disorder (3%)
- E. Paranoid personality disorder (2%)
- F. Schizophrenia (3%)
- G. Schizophreniform disorder (21%)
- H. Schizotypal personality disorder (0%)

Incorrect
Correct answer
C

64%
Answered correctly

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Explanation

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Differential diagnosis of DSM-5 psychotic disorders	
Brief psychotic disorder	**≥1 days & <1 month**, sudden onset, full return to function
Schizophreniform disorder	**≥1 months & <6 months**, same symptoms as schizophrenia, functional decline not required
Schizophrenia	**≥6 months** (includes ≥1 months of active symptoms, can include prodromal & residual periods), requires functional decline
Schizoaffective disorder	Mood episode with concurrent active-phase symptoms of schizophrenia + ≥2 weeks of delusions or hallucinations in the absence of prominent mood symptoms
Delusional disorder	**≥1 delusions & ≥1 months**, **no other psychotic symptoms**, normal functioning apart from direct impact of delusions

This patient's 2-week history of hearing voices and paranoid delusions is consistent with **brief psychotic disorder**. Onset is typically sudden in response to an overwhelming stressor. Diagnosis requires **≥1 psychotic symptoms** (ie, delusions, hallucinations, disorganized speech, grossly disorganized or catatonic behavior) lasting **>1 day and <1 month** with eventual return to premorbid functioning. The diagnosis requires ruling out psychosis secondary to a mood disorder and psychosis due to substances or a medical condition.

Symptom duration is a key feature in differentiating brief psychotic disorder from other psychotic disorders. If this patient's symptoms were to continue for >1 month but <6 months, the diagnosis of schizophreniform disorder would be indicated **(Choice G)**. If the symptoms were to continue for ≥6 months, the accurate diagnosis would be schizophrenia **(Choice F)**.

(Choice A) Acute stress disorder is characterized by symptoms of intrusion (eg, flashbacks), negative mood,

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(Choice A) Acute stress disorder is characterized by symptoms of intrusion (eg, flashbacks), negative mood, dissociation, avoidance, and arousal that occur in the initial month after exposure to a life-threatening traumatic event.

(Choice B) Bipolar disorder can present with psychotic features; however, this patient lacks other characteristic manic symptoms (eg, elated mood, increased energy, pressured speech, decreased need for sleep, grandiosity).

(Choice D) Delusional disorder is characterized by ≥1 delusions lasting ≥1 months and would not explain this patient's prominent hallucinations.

(Choices E and H) Personality disorders are characterized by enduring patterns of behavior. Patients with paranoid personality disorder are generally suspicious and distrustful. Schizotypal personality disorder is characterized by odd thinking and eccentric behavior, but not frank psychosis. Neither disorder would explain this patient's acute onset of delusions and hallucinations.

Educational objective:
Brief psychotic disorder is characterized by ≥1 psychotic symptoms lasting >1 day and <1 month with full return to previous levels of functioning. Onset is typically sudden and associated with a stressor.

References

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A 14-year-old boy is brought to the emergency department by ambulance after a teacher found him staggering and falling in the school parking lot between classes. When she found him, the patient seemed lethargic and disoriented, and his speech was slurred. His condition slowly improved over the next 30 minutes; when the patient is evaluated in the emergency department an hour after the teacher found him, he is alert, oriented, and able to speak clearly. The patient has no known medical history. Temperature is 36.7 C (98.1 F), blood pressure is 102/65 mm Hg, and pulse is 62/min. On physical examination, there are abrasions on the right forearm and shin and a rash around the nostrils and mouth. Which of the following substances is the most likely cause of this patient's symptoms?

- A. Alcohol
- B. Benzodiazepines
- C. Cocaine
- D. Inhalants
- E. Opiates
- F. Phencyclidine

Submit

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- ✗ A. Alcohol
- B. Benzodiazepines
- C. Cocaine
- ✓ D. Inhalants
- E. Opiates
- F. Phencyclidine

Incorrect
Correct answer
D

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Explanation

This patient's initial symptoms (eg, lethargy, ataxia [falling/abrasions], disorientation, slurred speech) followed by **rapid improvement** along with a **perioral and perinasal rash** on examination are highly suggestive of **inhalant**

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This patient's initial symptoms (eg, lethargy, ataxia [falling/abrasions], disorientation, slurred speech) followed by **rapid improvement** along with a **perioral and perinasal rash** on examination are highly suggestive of **inhalant use disorder**. Inhalants, in the form of glue, toluene, nitrous oxide, amyl nitrite, and spray paints, are often the first drugs that adolescents misuse as they are inexpensive and readily available. They may be inhaled from a saturated cloth held near the face, from a bag placed over the nose and mouth, or by sniffing directly. A dermatitis known as "glue sniffer's rash" may be seen around the mouth or nostrils of chronic users.

Inhalants cause **immediate effects** as they are highly lipid soluble and act as CNS depressants. They can produce brief **transient euphoria**, **lethargy**, disorientation, loss of consciousness, **poor coordination**, and **slurred speech**. Effects typically last 15-45 minutes. Severe complications include cardiac dysrhythmias, dangerous behavior, seizures, and death. Nitrous oxide misuse in particular is associated with vitamin B_{12} deficiency and resultant symptoms of polyneuropathy (eg, symmetric numbness, gait abnormalities).

(Choices A and B) Although alcohol and benzodiazepine use can cause similar mental status changes, this patient's rapid improvement and facial rash are more consistent with inhalant use disorder. Alcohol and benzodiazepine intoxication would likely result in a significantly longer period of intoxication.

(Choice C) Cocaine is a CNS stimulant that typically produces euphoria, increased arousal, psychomotor agitation, tachycardia, and hypertension. It would not explain this patient's lethargy and ataxia.

(Choice E) Classic signs of opioid intoxication include depressed mental status, respiratory depression, and miosis. The time course of symptoms and facial rash make inhalant use disorder a better explanation for this patient's symptoms.

(Choice F) Phencyclidine (ie, PCP) intoxication is characterized by nystagmus, altered mental status, and agitated or violent behavior.

Educational objective:
Inhalant intoxication is characterized by immediate onset of euphoria, lethargy, ataxia, and/or loss of

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Educational objective:
Inhalant intoxication is characterized by immediate onset of euphoria, lethargy, ataxia, and/or loss of consciousness followed by rapid recovery within 45 minutes. Perioral and perinasal dermatitis (ie, "glue sniffer's rash") may be seen in chronic users.

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An 8-year-old boy is brought to the pediatrician for school refusal. He has not gone to school for a few days, saying that he has a stomach ache. However, when it comes time for soccer practice, he has no physical symptoms. When the pediatrician asks how things are going at school, the patient says, "kids laughed at me when the teacher said she couldn't read my homework." His mother brings a recent report from the boy's teacher, which says that he is able to read and do math, but that when writing he fidgets a lot and stares out the window. His writing is unclear, disorganized, and below the level of his peers. His mother received a call from his teacher last week after the boy threw his writing book on the floor and began to cry. Vital signs and physical examination, including abdominal examination, are normal. At this time, which of the following is the most likely diagnosis in this patient?

- A. Attention-deficit hyperactivity disorder
- B. Language disorder
- C. Mild intellectual disability
- D. Oppositional defiant disorder
- E. Social anxiety disorder
- F. Somatic symptom disorder
- G. Specific learning disorder

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- A. Attention-deficit hyperactivity disorder (12%)
- B. Language disorder (4%)
- ✗ C. Mild intellectual disability (2%)
- D. Oppositional defiant disorder (1%)
- E. Social anxiety disorder (3%)
- F. Somatic symptom disorder (3%)
- ✓ G. Specific learning disorder (72%)

Incorrect
Correct answer
G

72%
Answered correctly

03 secs
Time Spent

2023
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Explanation

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A **learning disorder** is characterized by **difficulties** with key **academic skills** (**reading**, **writing**, or **mathematics**). Problems manifest at school age when these skills are being acquired, and performance is well below average for age. Many children display symptoms of anxiety, inattention, defiance, or hyperactivity when under stress to perform in an area of weakness, as exemplified by this child's struggle to pay attention and his emotional outburst in class. Learning disorders are often comorbid (eg, writing plus reading). In addition to academic dysfunction, they can also impact social skills and self-confidence.

Definitive diagnosis requires comprehensive assessment, including educational testing and ruling out intellectual disability, hearing or vision impairment, and other psychiatric or neurological disorders. Providers should consider the possibility of a learning disorder in any child presenting with **school difficulty**. Early intervention can be helpful in improving self-esteem and preventing further disability.

(Choice A) Attention-deficit hyperactivity disorder is characterized by inattention and/or hyperactivity-impulsivity across at least 2 settings. There is no indication that this child struggles with inattention or hyperactivity when asked to read or do math or that this is a problem in the home setting.

(Choice B) Language disorder presents with difficulties in acquiring and using language, which manifests in spoken as well as written language.

(Choice C) Intellectual disability begins in early development and includes deficits in general mental abilities and adaptive functioning. Specific learning disorders occur in the presence of normal levels of intellectual functioning.

(Choice D) In oppositional defiant disorder, there is a pattern of anger or irritability, argumentativeness, and defiant behavior. This patient's school refusal and throwing a book are in the context of stress. There is no indication that he is routinely defiant or argumentative.

(Choice E) This patient enjoys playing soccer, and his school refusal is more likely due to fears of being teased. A diagnosis of social anxiety disorder requires persistent symptoms ≥6 months. This boy's learning disorder should be addressed to avoid further social anxiety.

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(Choice D) In oppositional defiant disorder, there is a pattern of anger or irritability, argumentativeness, and defiant behavior. This patient's school refusal and throwing a book are in the context of stress. There is no indication that he is routinely defiant or argumentative.

(Choice E) This patient enjoys playing soccer, and his school refusal is more likely due to fears of being teased. A diagnosis of social anxiety disorder requires persistent symptoms ≥6 months. This boy's learning disorder should be addressed to avoid further social anxiety.

(Choice F) In somatic symptom disorder, anxiety revolves around a patient's symptoms. This boy is not anxious about his stomach ache; his stomach ache is a manifestation of his anxiety about school.

Educational objective:
Learning disorders are characterized by difficulties with key academic skills (reading, writing, or mathematics), resulting in performance well below expectations for age. Providers should consider a possible learning disorder in any school-aged child with behavioral, academic, or social difficulties at school.

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A 56-year-old man with a history of severe depression seeks a new physician after immigrating to the United States. His depression has been treated with phenelzine since diagnosis, and his new physician decides to switch him to sertraline. The patient is informed that he must wait at least 2 weeks after discontinuing phenelzine before starting the new drug. Which of the following processes occurs during this washout interval to allow sertraline therapy to be initiated safely?

- A. G protein–coupled receptor internalization
- B. Inositol monophosphatase inhibition
- C. Monoamine oxidase inhibition
- D. Monoamine receptor downregulation
- E. Monoamine reuptake inhibition
- F. Synthesis of monoamine oxidase

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- A. G protein–coupled receptor internalization (1%)
- ✗ B. Inositol monophosphatase inhibition (0%)
- C. Monoamine oxidase inhibition (6%)
- D. Monoamine receptor downregulation (24%)
- E. Monoamine reuptake inhibition (3%)
- ✓ F. Synthesis of monoamine oxidase (63%)

Incorrect
Correct answer
F

63%
Answered correctly

03 secs
Time Spent

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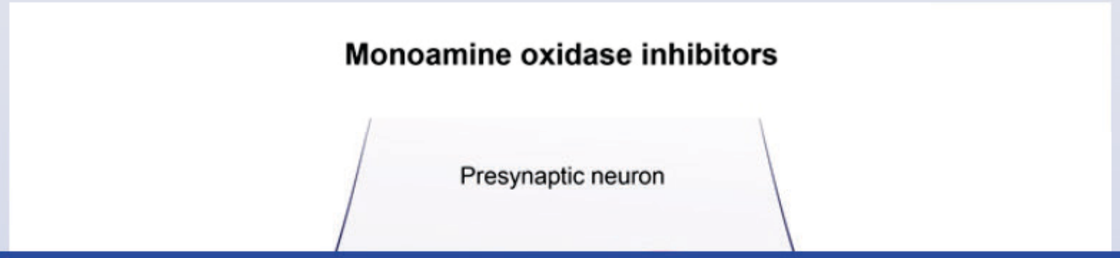
Version

Explanation



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Incorrect
Correct answer
F

63%
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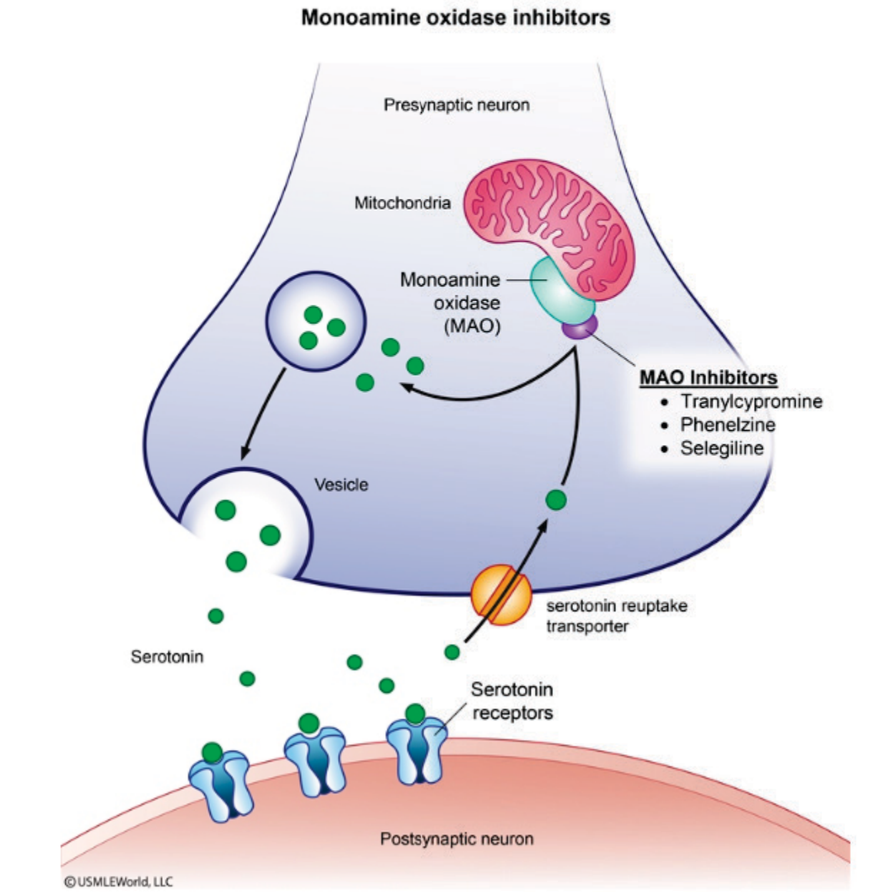

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Serotonin

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The pathophysiologic basis of depression is hypothesized to involve the dysregulation of monoamine (eg, serotonin, norepinephrine, dopamine) neurotransmission. Most antidepressant medications act by various mechanisms to increase synaptic concentrations of these neurotransmitters, particularly serotonin. Monoamine oxidase (MAO) is an enzyme located in presynaptic nerve terminals that is responsible for the breakdown of monoamine neurotransmitters. **Phenelzine**, a **monoamine oxidase inhibitor**, works by irreversibly binding and inhibiting both types of MAO: A and B. This results in increased presynaptic availability of monoamine neurotransmitters, thereby increasing their release into the synaptic cleft. Because phenelzine irreversibly inhibits MAO, it may take up to 2 weeks following discontinuation of the drug before MAO is resynthesized to a level adequate for normal monoamine degradation.

Sertraline is a selective serotonin reuptake inhibitor (SSRI) that specifically increases synaptic serotonin levels. Coadministration of an SSRI and an MAO inhibitor is contraindicated due to the risk of **serotonin syndrome**, a potentially fatal condition characterized by altered mental status, neuromuscular excitation (eg, hyperreflexia, clonus), and autonomic hyperactivity (eg, hyperthermia, tachycardia, diaphoresis). To avoid serotonin syndrome, patients must wait at least 2 weeks after MAO inhibitor discontinuation before initiating SSRI therapy, thereby allowing sufficient time for regeneration of the MAO enzyme.

(Choice A) Monoamine (eg, serotonin) receptors are G protein–coupled receptors. Internalization of activated G protein–coupled receptors plays a role in downregulating postsynaptic signal transduction when synaptic monoamine levels are chronically increased. However, this is not the reason for the 2-week washout period from phenelzine, which is required to resynthesize the irreversibly inhibited MAO enzyme.

(Choice B) Inositol monophosphatase inhibition is hypothesized to be one of the mechanisms by which lithium exerts its antidepressant and antimanic effects. Inositol monophosphatase is not affected by MAO inhibitors.

(Choice C) MAO inhibition arrests the breakdown of monoamines, thereby increasing their release into the synaptic cleft. Overall MAO functioning gradually increases after discontinuation of irreversible MAO inhibitors (eg, tranylcypromine, phenelzine) as new MAO is synthesized.

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(Choice D) Increased monoamine neurotransmission due to antidepressant treatment causes downregulation of postsynaptic monoamine (eg, serotonin) receptors, decreasing their density within the synaptic cleft. This (along with other chronic, downstream neuromodulatory changes) is responsible for the delayed clinical effects of antidepressants.

(Choice E) Presynaptic monoaminergic neurons actively take up norepinephrine, dopamine, and serotonin through reuptake transporters and repackage them into synaptic vesicles for future neurotransmission. Monoamine reuptake inhibitors, such as tricyclic antidepressants and SSRIs, work by blocking this reuptake.

Educational objective:
Coadministration of selective serotonin reuptake inhibitors (SSRIs) and monoamine oxidase (MAO) inhibitors can produce excessive synaptic serotonin levels secondary to decreased reuptake and decreased degradation of serotonin, potentially causing serotonin syndrome. To avoid this risk, a 2-week washout period after discontinuing an MAO inhibitor and before initiating SSRI therapy is required to allow sufficient time for MAO regeneration.

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serotonin, norepinephrine, dopamine) neurotransmission. Most antidepressant medications act by various

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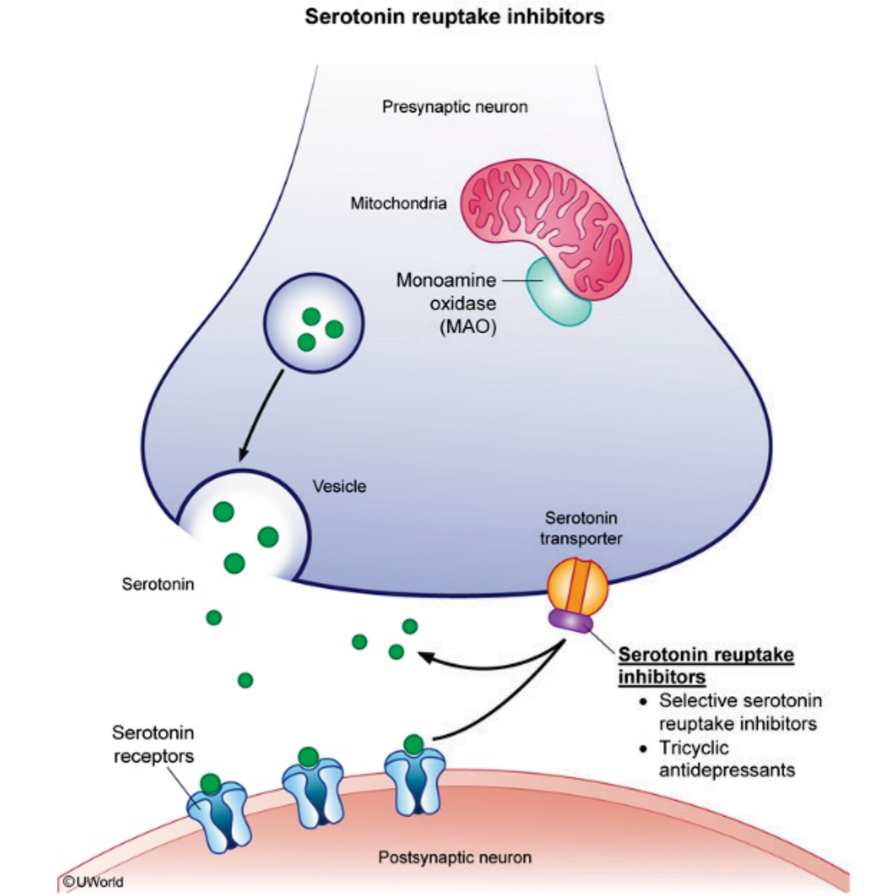

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(Choice D) Increased monoamine neurotransmission due to antidepressant treatment causes downregulation of

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A 22-year-old woman is brought to the emergency department for bizarre behavior over the past week. Her parents state that she has been "talking nonsense" nonstop, laughing for no reason, and has not slept for several days. During triage, the patient attempted to hit a staff member, resulting in administration of haloperidol. While awaiting further evaluation, the parents alert the nurse that the patient is starting to "make weird faces" while sticking out her tongue. Medical history is noncontributory, and the patient takes no medications. Urine drug screen is positive for cannabis and opiates. Which of the following is the most likely explanation for this patient's motor symptoms?

- A. Catatonia
- B. Conversion disorder
- C. Medication reaction
- D. Opioid withdrawal
- E. Psychotic agitation

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- ✗ A. Catatonia (10%)
- B. Conversion disorder (1%)
- ✓ C. Medication reaction (58%)
- D. Opioid withdrawal (7%)
- E. Psychotic agitation (21%)

Incorrect
Correct answer
C

58%
Answered correctly

03 secs
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Explanation

Common antipsychotic side effects	
	High-potency (eg, haloperidol) • Extrapyramidal symptoms (acute dystonia, akathisia, parkinsonism),

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Common antipsychotic side effects	
First-generation antipsychotics (FGAs)	**High-potency** (eg, haloperidol) • Extrapyramidal symptoms (acute dystonia, akathisia, parkinsonism), tardive dyskinesia **Low-potency** (eg, chlorpromazine) • Sedation, cholinergic blockade, orthostatic hypotension, weight gain
Second-generation antipsychotics (SGAs)	• Metabolic syndrome, weight gain • Extrapyramidal symptoms (less common than FGAs)

This patient is likely experiencing an **acute dystonic reaction** in response to administration of haloperidol, a high-potency, first-generation antipsychotic. Acute dystonic reactions are a type of extrapyramidal symptom (EPS) thought to result from **D2 antagonism** in the nigrostriatal pathway. The condition develops abruptly within hours to days after receiving **antipsychotic medication** and is characterized by **sudden involuntary contraction** of a major muscle group (eg, this patient's tongue protrusion and facial grimacing). Other examples include torticollis (neck muscle contraction), oculogyric crisis (forced, sustained elevation of the eyes in an upward position), opisthotonus (arching of the back with the head thrown backward), and, rarely, laryngospasm.

Treatment of dystonic reactions consists of medications with anticholinergic properties (eg, diphenhydramine, benztropine), which alter cholinergic signaling in the striatum to decrease spontaneous movement. In addition to acute dystonia, other types of antipsychotic-induced EPS include akathisia (inner restlessness) and drug-induced parkinsonism (tremor, rigidity, bradykinesia, masked facies).

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(Choice A) Catatonia is a motor disturbance seen in severe psychiatric or medical illness characterized by inability to move normally and resulting in either marked reduction in movements (eg, immobility, stupor) or marked agitation (stereotypy, hyperkinetic limb movements). The sudden onset of a spasm in a specific muscle group is more consistent with a dystonic reaction.

(Choice B) Conversion disorder (functional neurologic symptom disorder) is characterized by neurologic symptoms (eg, weakness, abnormal movements, nonepileptic seizures) that are inconsistent with known neurologic disease. It would not be diagnosed in a patient whose abnormal movements are readily explained by a medication reaction.

(Choice D) Symptoms of opioid withdrawal include gastrointestinal distress, lacrimation, rhinorrhea, myalgias/arthralgias, and yawning. These symptoms are not present in this patient and opioid withdrawal would not explain her tongue protrusion.

(Choice E) Patients with psychotic agitation may exhibit unusual movements and postures. However, the abrupt onset of tongue protrusion following administration of haloperidol is more likely explained as an acute dystonic

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Educational objective:
Acute dystonic reaction is characterized by sudden, involuntary contraction of a major muscle group. It is a type of extrapyramidal symptom and a common adverse effect of antipsychotic medications, particularly high-potency, first-generation antipsychotics such as haloperidol.

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A 26-year-old man is hospitalized after he was found in the park shouting and laughing to himself. He insists on wearing a cap lined with several layers of aluminum foil and explains that the hat prevents laser beams from reprogramming his mind. For the past 3 years, the patient has been hearing the voices of his deceased mother, the devil, and a world-famous singer. He has had one previous psychiatric hospitalization, during which he responded well to haloperidol. However, the patient stopped the medication shortly after discharge because he did not like the way it made him feel. A decision is made to administer a second-generation antipsychotic medication. Compared with first-generation antipsychotics, this class of medication is associated with which of the following?

- A. Greater efficacy in the treatment of positive psychotic symptoms
- B. Greater risk of anticholinergic effects
- C. Greater risk of tardive dyskinesia
- D. Lower risk of acute dystonia
- E. Lower risk of metabolic adverse effects
- F. Lower risk of seizures

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- A. Greater efficacy in the treatment of positive psychotic symptoms (8%)
- ✗ B. Greater risk of anticholinergic effects (8%)
- C. Greater risk of tardive dyskinesia (3%)
- ✓ D. Lower risk of acute dystonia (69%)
- E. Lower risk of metabolic adverse effects (5%)
- F. Lower risk of seizures (3%)

Incorrect
Correct answer
D

69%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Common antipsychotic side effects	
	High-potency (eg, haloperidol)

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Common antipsychotic side effects	
First-generation antipsychotics (FGAs)	**High-potency** (eg, haloperidol) • Extrapyramidal symptoms (acute dystonia, akathisia, parkinsonism), tardive dyskinesia **Low-potency** (eg, chlorpromazine) • Sedation, cholinergic blockade, orthostatic hypotension, weight gain
Second-generation antipsychotics (SGAs)	• Metabolic syndrome, weight gain • Extrapyramidal symptoms (less common than FGAs)

This patient is experiencing an acute psychotic episode (delusions, hallucinations, disorganized behavior) most likely due to schizophrenia, a chronic psychotic illness with typical onset in young adulthood. His treatment history indicates a good response to the **first-generation antipsychotic** (FGA) haloperidol but poor adherence, likely because of tolerability issues. As a class, FGAs are associated with a **high risk of extrapyramidal symptoms** (EPSs) due to their potent D2 antagonism. Types of EPS effects include acute dystonic reactions, drug-induced parkinsonism, akathisia (inner restlessness and inability to sit still), and tardive dyskinesia.

Second-generation antipsychotics (SGAs) are often used for first-line treatment in schizophrenia due to their **lower risk of EPSs** compared with FGAs. However, SGAs are associated with **weight gain** and **metabolic effects**, including the development of **diabetes**. Side effect profiles of individual SGAs vary; olanzapine and clozapine are associated with the greatest risk of metabolic effects.

(Choice A) FGAs and SGAs appear to be equally effective in the treatment of positive psychotic symptoms.

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This patient is experiencing an acute psychotic episode (delusions, hallucinations, disorganized behavior) most likely due to schizophrenia, a chronic psychotic illness with typical onset in young adulthood. His treatment history indicates a good response to the **first-generation antipsychotic** (FGA) haloperidol but poor adherence, likely because of tolerability issues. As a class, FGAs are associated with a **high risk of extrapyramidal symptoms** (EPSs) due to their potent D2 antagonism. Types of EPS effects include acute dystonic reactions, drug-induced parkinsonism, akathisia (inner restlessness and inability to sit still), and tardive dyskinesia.

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(Choice A) FGAs and SGAs appear to be equally effective in the treatment of positive psychotic symptoms.

(Choice B) Both FGAs and SGAs block muscarinic receptors to varying degrees. Low-potency FGAs (eg, chlorpromazine) and the SGAs olanzapine, quetiapine, and clozapine have the greatest risk.

(Choice C) SGAs are less likely to cause tardive dyskinesia than FGAs.

(Choice E) Compared with FGAs, SGAs have a greater risk of metabolic adverse effects.

(Choice F) Both FGAs and SGAs have been associated with lowering the seizure threshold. The SGA clozapine, in particular, has been associated with a dose-dependent increase in seizure risk.

Educational objective:
Second-generation antipsychotics are associated with a lower risk of extrapyramidal side effects compared with first-generation antipsychotics but may cause adverse metabolic effects.

References

- Second-generation antipsychotics and extrapyramidal adverse effects.
- Atypical antipsychotics: A review on the prevalence, monitoring, and management of their metabolic and

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A 34-year-old woman comes to the office accompanied by her husband for an employment physical examination. The patient says, "I'd rather not be here, but my job requires labs every 2 years." While getting blood drawn, she starts to feel anxious, nauseated, and short of breath, and says, "I feel like the room is spinning." The patient's husband explains that she has had similar episodes since childhood, which began following a bike accident during which she cut her knee and bled profusely. Medical history is significant for asthma and type 2 diabetes mellitus. Temperature is 36.7 C (98.1 F), blood pressure is 140/90 mm Hg, pulse is 104/min, and respirations are 20/min. BMI is 36 kg/m^2. Physical examination is significant for anxious demeanor but is otherwise unremarkable. Which of the following is the most likely diagnosis?

- A. Anxiety due to a medical condition
- B. Illness anxiety disorder
- C. Panic disorder
- D. Posttraumatic stress disorder
- E. Specific phobia

Submit

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✗ A. Anxiety due to a medical condition (1%)
B. Illness anxiety disorder (0%)
C. Panic disorder (4%)
D. Posttraumatic stress disorder (9%)
✓ E. Specific phobia (82%)

Incorrect
Correct answer
E

82%
Answered correctly

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Time Spent

2023
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Explanation

Specific phobia	
	• Marked anxiety about a specific object or situation (the phobic stimulus) for >6 months

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Specific phobia	
Clinical features	• Marked anxiety about a specific object or situation (the phobic stimulus) for >6 months • Common types: flying, heights, animals, injections, blood • Avoidance behaviors: avoiding bridges, elevators & injections; refusing work-required travel
Treatment	• Cognitive-behavioral therapy with graded exposure

This patient's marked anxiety response and **fear regarding blood drawing** (a specific phobic stimulus) with a history of avoidance behavior is consistent with **specific phobia**, one of the most common anxiety disorders. The **blood-injection-injury type** (ie, fear of blood, injections, and injury) is often accompanied by a **vasovagal fainting** response, and severe cases may be associated with avoidance of necessary medical procedures. Other subtypes of specific phobia, based on the type of phobic stimulus, include animals (eg, insects, snakes, dogs), natural environment (eg, heights, storms, water), and situations (eg, elevators, enclosed places, airplanes).

The treatment of choice of specific phobia is cognitive-behavioral therapy with repetitive, graded exposure to the fear-inducing stimulus.

(Choice A) Although medical conditions such as asthma or hypoglycemia can result in anxiety, it is more likely that this patient's longstanding and specific fear of blood is triggering her current symptoms.

(Choice B) Illness anxiety disorder involves persistent preoccupation with having or developing a serious medical condition.

(Choice C) Patients with specific phobia may experience anxiety that reaches the level of a panic attack when exposed to the phobic stimulus. However, panic attacks in specific phobia are always triggered by the phobic stimulus; diagnosis of panic disorder requires that patients experience recurrent, unexpected panic attacks with no

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(Choice A) Although medical conditions such as asthma or hypoglycemia can result in anxiety, it is more likely that this patient's longstanding and specific fear of blood is triggering her current symptoms.

(Choice B) Illness anxiety disorder involves persistent preoccupation with having or developing a serious medical condition.

(Choice C) Patients with specific phobia may experience anxiety that reaches the level of a panic attack when exposed to the phobic stimulus. However, panic attacks in specific phobia are always triggered by the phobic stimulus; diagnosis of panic disorder requires that patients experience recurrent, unexpected panic attacks with no trigger.

(Choice D) Both specific phobia and posttraumatic stress disorder (PTSD) may be associated with anxiety and avoidance of situations related to a traumatic event. However, PTSD also involves intrusive symptoms of reexperiencing (eg, flashbacks, nightmares) that are not present in this patient.

Educational objective:
Specific phobia is a common anxiety disorder characterized by high levels of anxiety and panic attacks triggered by exposure, or anticipation of exposure, to a feared stimulus. As a result, these patients try to avoid the phobic stimulus whenever possible.

References

- Specific phobia.

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A 19-year-old college student comes to the office with new-onset fatigue. The patient has had difficulty getting up in the morning for the past week and states he would sleep 10-12 hours if his schedule allowed. He also reports vivid dreams. The patient was diagnosed with attention-deficit hyperactivity disorder at age 10 and has been treated with dextroamphetamine since then. However, his prescription ran out early recently after he doubled the dosage to help him study during exams. Which of the following findings is most likely to be present in this patient?

- A. Dilated pupils
- B. Hyperphagia
- C. Rhinorrhea
- D. Seizures
- E. Tachycardia
- F. Tremors

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- ✗ A. Dilated pupils (13%)
- ✓ B. Hyperphagia (46%)
- C. Rhinorrhea (7%)
- D. Seizures (2%)
- E. Tachycardia (17%)
- F. Tremors (11%)

Incorrect
Correct answer
B

46%
Answered correctly

03 secs
Time Spent

2023
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Explanation

Common withdrawal syndromes		
Substance	**Symptoms**	**Examination findings**
Alcohol	Tremors, agitation, anxiety, delirium,	

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Common withdrawal syndromes		
Substance	**Symptoms**	**Examination findings**
Alcohol	Tremors, agitation, anxiety, delirium, psychosis	Seizures, tachycardia, palpitations
Benzodiazepines	Tremors, anxiety, perceptual disturbances, psychosis, insomnia	
Opioids	Nausea, vomiting, abdominal cramping, diarrhea, muscle aches	Dilated pupils, yawning, piloerection, lacrimation, hyperactive bowel sounds
Stimulants (eg, cocaine, amphetamines)	Increased appetite, hypersomnia, intense psychomotor retardation, severe depression ("crash")	No significant findings
Nicotine	Dysphoria, irritability, anxiety, increased appetite	
Cannabis	Irritability, anxiety, depressed mood,	No significant findings

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Substance	Symptoms	Examination findings
Alcohol	Tremors, agitation, anxiety, delirium, psychosis	Seizures, tachycardia, palpitations
Benzodiazepines	Tremors, anxiety, perceptual disturbances, psychosis, insomnia	
Opioids	Nausea, vomiting, abdominal cramping, diarrhea, muscle aches	Dilated pupils, yawning, piloerection, lacrimation, hyperactive bowel sounds
Stimulants (eg, cocaine, amphetamines)	Increased appetite, hypersomnia, intense psychomotor retardation, severe depression ("crash")	No significant findings
Nicotine	Dysphoria, irritability, anxiety, increased appetite	
Cannabis	Irritability, anxiety, depressed mood, insomnia, decreased appetite	No significant findings

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Cannabis	Irritability, anxiety, depressed mood, insomnia, decreased appetite	No significant findings

This patient's new-onset fatigue, hypersomnia, and vivid dreams following abrupt cessation of prolonged stimulant (eg, dextroamphetamine) use is most likely due to **stimulant withdrawal**. Decreased appetite and insomnia are the most common adverse effects of stimulant medications used to treat attention-deficit hyperactivity disorder, and abrupt stimulant withdrawal is associated with the opposite symptoms of **fatigue**, **hypersomnia**, and **hyperphagia**. Dysphoric mood may also occur.

Use of supratherapeutic doses of prescribed stimulants or use that deviates from prescription instructions (eg, insufflation to attain a euphoric effect) increases the risk for withdrawal and adverse effects. Depending on the half-life of the agent used, symptoms of stimulant withdrawal typically present within hours to days of cessation or reduction of heavy or prolonged use and resolve without treatment. In contrast to withdrawal from alcohol, benzodiazepines, and opiates, physical symptoms in stimulant withdrawal are minor.

(Choices A and C) Dilated pupils and rhinorrhea are classic symptoms of opioid withdrawal. Pupillary dilation may be seen during acute intoxication with stimulants but not during withdrawal.

(Choices D, E, and F) Seizures, tachycardia, and tremors are features of alcohol and benzodiazepine withdrawal syndromes. These features may be seen in stimulant overdose but not in stimulant withdrawal.

Educational objective:
Stimulant withdrawal is characterized by dysphoric mood, fatigue, hypersomnia, hyperphagia, and vivid dreams. In contrast to many other withdrawal syndromes, stimulant withdrawal is not associated with significant findings on physical examination.

References

- Food consumption and weight gain after cessation of chronic amphetamine administration

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A 2-day-old infant is evaluated in the newborn nursery due to poor feeding. The infant is irritable, is not sleeping well, and has had several episodes of vomiting and loose stools today. A review of the maternal history reveals that the mother had poor prenatal care and that the pregnancy was complicated by fetal growth restriction. On examination, the infant is diaphoretic and has a high-pitched cry. The infant is also noted to have occasional sneezing and is mildly tachypneic. No dysmorphic features are noted, and the remainder of the examination is unremarkable. This infant's symptoms are most likely caused by prenatal exposure to which of the following?

- A. Alcohol
- B. Cocaine
- C. Heroin
- D. Phenytoin
- E. Valproic acid

Submit

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- A. Alcohol (11%)
- ✗ B. Cocaine (27%)
- ✓ C. Heroin (55%)
- D. Phenytoin (3%)
- E. Valproic acid (2%)

Incorrect
Correct answer
C

55%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Neonatal abstinence syndrome	
Pathophysiology	• Withdrawal from transplacental opiates due to maternal drug use
Clinical manifestations	• Neurologic: irritability, hypertonia, jittery movements, seizures (rare) • Gastrointestinal: diarrhea, vomiting, feeding intolerance

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Pathophysiology	• Withdrawal from transplacental opiates due to maternal drug use
Clinical manifestations	• Neurologic: irritability, hypertonia, jittery movements, seizures (rare) • Gastrointestinal: diarrhea, vomiting, feeding intolerance • Autonomic: sweating, sneezing, pupillary dilation
Treatment	• Opioid therapy (eg, morphine, methadone)

This newborn has signs of **neonatal abstinence syndrome** (NAS) (also known as neonatal opioid withdrawal syndrome). Withdrawal from transplacental exposure to maternal substances (primarily opioids) occurs in the setting of maternal prescription use/misuse, recreational drug use (eg, **heroin**), or treatment for a substance use disorder (eg, methadone).

NAS usually presents in the first few days of life and is characterized by irritability, a high-pitched cry, **sleeping and feeding difficulties**, tremors, seizures, **autonomic dysfunction** (eg, sweating, sneezing), **tachypnea, vomiting**, and **diarrhea**.

Treatment for NAS includes symptomatic care to calm the infant and help the infant sleep, such as swaddling and maintaining a low-stimulation environment. Pharmacologic treatment (eg, morphine, methadone) is used when supportive treatment alone does not control the infant's withdrawal symptoms.

(Choice A) Fetal alcohol syndrome consists of growth deficiency; presence of a long, smooth philtrum; small palpebral fissures; and a thin upper lip in addition to CNS abnormalities such as intellectual disability. Withdrawal symptoms are usually not seen unless the mother was drinking just prior to delivery.

(Choice B) Prenatal exposure to cocaine can result in jitteriness, excessive sucking, and a hyperactive Moro reflex (due to the toxic effects of cocaine); by contrast, withdrawal symptoms from cocaine are usually not as severe as with opiates. Long-term effects on behavior, attention level, and intelligence may be seen.

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(Choice D) Prenatal exposure to phenytoin can result in fetal hydantoin syndrome, which is characterized by nail and digit hypoplasia, dysmorphic facies, and intellectual disability. Growth deficiency can also be seen.

(Choice E) Fetal exposure to valproic acid significantly increases the risk of neural tube defects; may result in cardiac anomalies; and can produce dysmorphic facies, including a cleft lip, narrow bifrontal diameter, midface hypoplasia, broad and depressed nasal bridge, and long philtrum.

Educational objective:
Neonatal abstinence syndrome is caused by infant withdrawal to opiates (eg, heroin) and usually presents in the first few days of life. It is characterized by irritability, a high-pitched cry, poor sleeping, tremors, seizures, sweating, sneezing, tachypnea, poor feeding, vomiting, and diarrhea.

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Educational objective:

Neonatal abstinence syndrome is caused by infant withdrawal to opiates (eg, heroin) and usually presents in the

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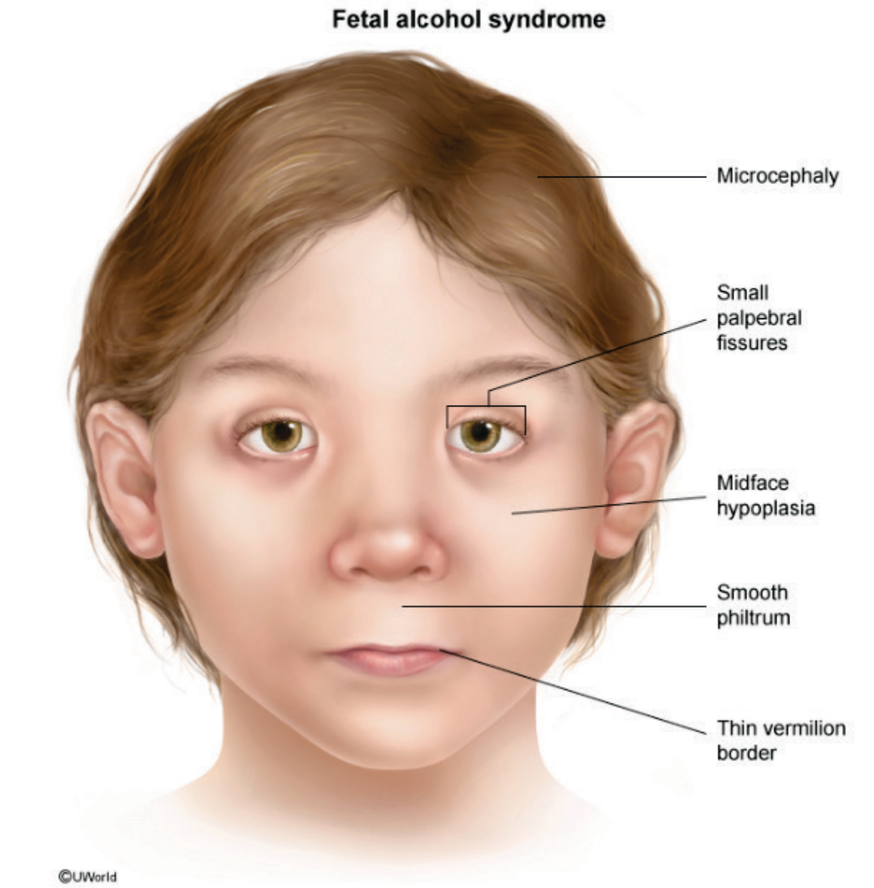

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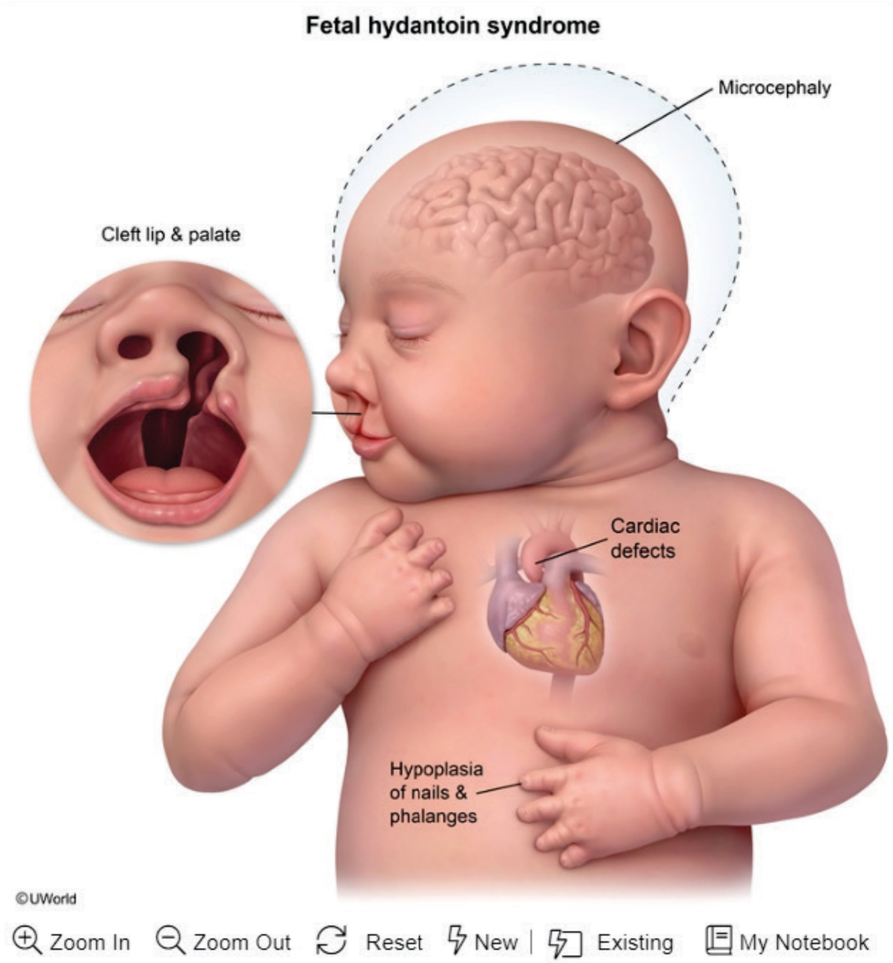

Educational objective:

Neonatal abstinence syndrome is caused by infant withdrawal to opiates (eg, heroin) and usually presents in the

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A 10-year-old boy is brought to the pediatric clinic due to unusual classroom behavior for the past year, which has worsened over the last few weeks. Although the patient is generally quiet, he intermittently disrupts the class with sniffling, repetitive throat clearing, and grunting sounds. His teacher states that the boy distracts other students and that his focus in class is poor. The behaviors worsen when he is tired, stressed, or excited. The patient's parents are also concerned because he has only a few friends and his classmates make fun of him. Medical history is significant for recurrent otitis media as a toddler, atopic dermatitis, and an influenza infection 9 months ago. Family history is significant for rheumatoid arthritis and anxiety in his mother. Temperature is 36.7 C (98 F), pulse is 78/min, blood pressure is 110/72 mm Hg, and respirations are 14/min. Physical examination shows frequent eye blinking and shoulder shrugging but is otherwise normal. Which of the following is the most likely diagnosis?

- A. Attention-deficit hyperactivity disorder
- B. Stereotypic movement disorder
- C. Sydenham chorea
- D. Tourette syndrome
- E. Wilson disease

Submit

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A 10-year-old boy is brought to the pediatric clinic due to unusual classroom behavior for the past year, which has worsened over the last few weeks. Although the patient is generally quiet, he intermittently disrupts the class with sniffling, repetitive throat clearing, and grunting sounds. His teacher states that the boy distracts other students and that his focus in class is poor. The behaviors worsen when he is tired, stressed, or excited. The patient's parents are also concerned because he has only a few friends and his classmates make fun of him. Medical history is significant for recurrent otitis media as a toddler, atopic dermatitis, and an influenza infection 9 months ago. Family history is significant for rheumatoid arthritis and anxiety in his mother. Temperature is 36.7 C (98 F), pulse is 78/min, blood pressure is 110/72 mm Hg, and respirations are 14/min. Physical examination shows frequent eye blinking and shoulder shrugging but is otherwise normal. Which of the following is the most likely diagnosis?

- A. Attention-deficit hyperactivity disorder (3%)
- ✗ B. Stereotypic movement disorder (4%)
- C. Sydenham chorea (2%)
- ✓ D. Tourette syndrome (89%)
- E. Wilson disease (0%)

Incorrect
Correct answer
D

89%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Tourette syndrome

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Tourette syndrome	
Clinical features	• Both **multiple motor tics & ≥1 vocal tics** (not necessarily concurrent) >1 year ◦ Motor: facial grimacing, blinking, head/neck jerking, shoulder shrugging, tongue protrusion, sniffing ◦ Vocal: grunting, snorting, throat clearing, barking, yelling, coprolalia (obscenities) • Onset age <18 (commonly age 6-15)

This patient is experiencing **both vocal** and multiple **motor tics** (sudden, intermittent, nonrhythmic motor movements and vocalizations) consistent with a diagnosis of **Tourette syndrome**. Vocal tics can range from simple sounds (eg, coughing, grunting, throat clearing) to blurting out inappropriate comments and obscenities (coprolalia). They are typically preceded by irresistible urges and followed by feelings of relief. Tics have a waxing and waning course and are typically exacerbated by stress or fatigue, but they can be suppressed voluntarily for brief periods.

Tourette syndrome is more **common** in **boys** and typically presents at **age 6-15**. Comorbid psychiatric conditions such as attention-deficit/hyperactivity disorder (ADHD) and obsessive-compulsive disorder are common.

(Choice A) Although ADHD is a common comorbidity, this patient does not exhibit sufficient symptoms of inattention and hyperactivity/impulsivity required for this diagnosis.

(Choice B) Stereotypic movement disorder is characterized by simple repetitive movements (eg, rocking, head

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Tourette syndrome is more **common** in **boys** and typically presents at **age 6-15**. Comorbid psychiatric conditions such as attention-deficit/hyperactivity disorder (ADHD) and obsessive-compulsive disorder are common.

(Choice A) Although ADHD is a common comorbidity, this patient does not exhibit sufficient symptoms of inattention and hyperactivity/impulsivity required for this diagnosis.

(Choice B) Stereotypic movement disorder is characterized by simple repetitive movements (eg, rocking, head banging), which are voluntary in nature and seemingly purposeless. They are often seen in children with autism spectrum disorders and intellectual disability and are a common form of self-soothing.

(Choice C) Sydenham chorea is a manifestation of rheumatic fever (related to group A streptococcal infection) characterized by choreiform movements (brief, random, irregular contractions of the limbs and face), emotional lability, and hypotonia. Tics can be differentiated from chorea by their patterned, repetitive appearance; ability to be temporarily suppressed; and association with premonitory urges.

(Choice E) Wilson disease is caused by copper accumulation and can present in children and adolescents. It is characterized by liver dysfunction, neurological signs (eg, dysarthria, dystonia, ataxia) rather than tics, and psychiatric abnormalities (eg, depression, psychosis).

Educational objective:
Tourette syndrome is a common childhood neuropsychiatric disorder characterized by both vocal and multiple motor tics. These tics characteristically wax and wane, can be suppressed temporarily, and are preceded by a premonitory urge.

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A 26-year-old man is brought to the emergency department by police after assaulting customers in a restaurant. He explains that he meant no harm and was just trying to talk to people and touch them to "heal their pain." The patient has been up all night for the past 10 days devising a global strategy to end world hunger and has written a hundred-page manifesto documenting his ideas. Over this same period, he began hearing a voice telling him that he is "God's true son" and will need to sacrifice his life. The patient has no psychiatric or medical history. He drinks alcohol socially but does not use illicit drugs. Physical examination is normal. On mental status examination, the patient paces continuously. His mood is very irritable, and his speech is loud, rapid, and difficult to interrupt. Which of the following is the most likely diagnosis in this patient?

- A. Bipolar I disorder with psychotic features
- B. Bipolar II disorder
- C. Brief psychotic disorder
- D. Delusional disorder
- E. Schizophreniform disorder
- F. Substance-induced psychotic disorder

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- ✓ A. Bipolar I disorder with psychotic features (52%)
- ✗ B. Bipolar II disorder (1%)
- C. Brief psychotic disorder (25%)
- D. Delusional disorder (5%)
- E. Schizophreniform disorder (13%)
- F. Substance-induced psychotic disorder (1%)

Incorrect
Correct answer
A

52%
Answered correctly

06 secs
Time Spent

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Explanation

Manic episode	
	>1 week of elevated or irritable mood & increased energy/activity

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Manic episode	
Clinical features	• ≥1 week of elevated or irritable mood & increased energy/activity • ≥3 of the following symptoms (4 if mood is irritable only) (**DIGFAST** mnemonic): ◦ **Distractibility** ◦ **Impulsivity**/indiscretion, risky behavior ◦ **Grandiosity** ◦ **Flight of ideas**/racing thoughts ◦ Increased **activity**/psychomotor agitation ◦ Decreased need for **sleep** ◦ **Talkativeness**/pressured speech
Severity	• Impaired psychosocial function • May have psychotic features (hallucinations, delusions) • May require hospitalization

This patient's symptoms of **irritable mood**, **impulsivity**, **hyperactivity**, **pressured speech**, **decreased need for sleep**, and **grandiose delusions** lasting ≥1 week meet the criteria for a **manic episode** (Table). Although an elevated mood typifies a manic episode, an irritable mood is commonly seen. Patients with ≥1 manic episodes are diagnosed with **bipolar I disorder**; although most bipolar I patients will experience both major depressive and manic episodes, depressive episodes are not required for diagnosis of bipolar I. Manic episodes can occur **with or without psychotic features** (eg, delusions, hallucinations).

Bipolar disorder with psychotic features may be differentiated from a primary psychotic disorder (eg, schizoaffective disorder bipolar type) based on the temporal relationship between the mood disturbance and the psychosis. In psychotic disorders, psychotic symptoms must persist in the absence of mood symptoms. This patient's psychosis has occurred only in the presence of severe manic symptoms, making bipolar I disorder the more likely diagnosis.

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(Choice B) Bipolar II disorder involves hypomanic episodes (less severe than mania and without psychotic features) and major depressive episodes.

(Choice C) Brief psychotic disorder is characterized by acute onset of ≥1 psychotic symptoms lasting ≥1 days but <1 month, with eventual complete resolution. The diagnosis cannot be made when psychotic symptoms occur only in the context of a manic episode, as in this patient.

(Choice D) Delusional disorder is characterized by ≥1 delusions in the absence of other psychotic symptoms. Functioning may be normal apart from the direct impact of the delusion. Mood symptoms, if present, are not prominent.

(Choice E) In schizophreniform disorder, symptoms of schizophrenia (delusions, hallucinations, disorganized speech and behavior, negative symptoms) are present for >1 month but <6 months. This patient's psychotic symptoms have occurred only in the context of a manic episode and have been present for <1 month.

(Choice F) Substance-induced disorders should be ruled out prior to diagnosing primary psychiatric illness. The extent of this patient's alcohol use would be unlikely to cause his current symptoms. Cocaine and stimulants are more likely to induce manic symptoms

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(Choice F) Substance-induced disorders should be ruled out prior to diagnosing primary psychiatric illness. The extent of this patient's alcohol use would be unlikely to cause his current symptoms. Cocaine and stimulants are more likely to induce manic symptoms.

Educational objective:
Bipolar I disorder is diagnosed in patients with ≥1 episodes of mania. Manic episodes are characterized by elevated/irritable mood, impulsivity, hyperactivity, decreased need for sleep, pressured speech, and grandiosity and may occur with psychotic features.

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A 28-year-old man is hospitalized due to the acute onset of severe depression and suicidal ideation for several days. He was recently thrown out of his mother's home after stealing her money to support his drug habit. The patient reports fatigue and vivid, disturbing dreams. The nursing staff note that he is irritable, withdrawn, hypersomnolent, and hyperphagic. The patient has an extensive history of substance abuse and has been hospitalized previously for alcohol detoxification. Blood pressure is 110/80 mm Hg and pulse is 64/min. Physical examination shows old injuries from a motorcycle accident but no other abnormalities. On mental status examination, he appears lethargic and dysphoric. This patient's current symptoms are most likely the result of which of the following conditions?

- A. Alcohol withdrawal
- B. Benzodiazepine withdrawal
- C. Cannabis withdrawal
- D. Cocaine withdrawal
- E. Major depressive disorder
- F. Opiate withdrawal

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- A. Alcohol withdrawal (8%)
- ✕ B. Benzodiazepine withdrawal (6%)
- C. Cannabis withdrawal (14%)
- ✓ D. Cocaine withdrawal (54%)
- E. Major depressive disorder (6%)
- F. Opiate withdrawal (9%)

Incorrect
Correct answer
D

54%
Answered correctly

32 secs
Time Spent

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Explanation

Common withdrawal syndromes		
Substance	Symptoms	Examination findings

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Common withdrawal syndromes		
Substance	**Symptoms**	**Examination findings**
Alcohol	Tremors, agitation, anxiety, delirium, psychosis	Seizures, tachycardia, palpitations
Benzodiazepines	Tremors, anxiety, perceptual disturbances, psychosis, insomnia	
Opioids	Nausea, vomiting, abdominal cramping, diarrhea, muscle aches	Dilated pupils, yawning, piloerection, lacrimation, hyperactive bowel sounds
Stimulants (eg, cocaine, amphetamines)	Increased appetite, hypersomnia, intense psychomotor retardation, severe depression ("crash")	No significant findings
Nicotine	Dysphoria, irritability, anxiety, increased appetite	
Cannabis	Irritability, anxiety, depressed mood,	No significant findings

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	appetite	

This patient's **depression**, **fatigue**, **hypersomnia**, **hyperphagia**, and **vivid dreams** are characteristic of **cocaine withdrawal**. Symptoms occur within hours to days of cessation or reduction of heavy or prolonged use. Following a binge, patients may experience a period of acute, intense symptoms, including severe depression with suicidal ideation, pronounced lassitude (the "**crash**"), and drug cravings. In contrast to withdrawal from opiates, alcohol, and benzodiazepines, withdrawal from cocaine and other stimulants usually results in **minor physical symptoms**. No medication has proven to be effective in treating cocaine withdrawal, and treatment is supportive only.

(Choice A) Alcohol withdrawal is a medically serious syndrome characterized by initial symptoms of agitation, tremors, tachycardia, and hypertension (12-24 hours), with some patients progressing to seizures and delirium tremens.

(Choice B) Symptoms of benzodiazepine withdrawal include anxiety, insomnia, perceptual disturbances, tachycardia, seizures, and psychosis.

(Choice C) Patients who cease heavy and prolonged cannabis use may have irritability, anxiety, depressed mood, insomnia, restlessness, and decreased appetite. Nonspecific physical symptoms such as muscle aches may also be present.

(Choice E) Insufficient duration of symptoms and probable relationship to substance use make major depressive disorder less likely.

(Choice F) Opioid withdrawal is characterized by abdominal cramps, nausea, vomiting, yawning, muscle aches, piloerection, lacrimation, and dilated pupils. Although withdrawal is uncomfortable, it is generally not life-threatening.

Educational objective:
Cocaine withdrawal is characterized by the development of acute depression accompanied by fatigue, hypersomnia, hyperphagia, and vivid dreams.

References

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A 58-year-old woman comes to the office with new-onset low back pain. The patient was helping her friend move yesterday and strained her back. She does not drink alcohol or use illicit substances. Medical history includes hypertension and major depressive disorder currently treated with captopril and citalopram. A short course of medication is prescribed, and the patient is asked to monitor for development of diaphoresis, restlessness, tremors, and diarrhea. The patient was most likely prescribed which of the following medications?

- A. Baclofen
- B. Celecoxib
- C. Diazepam
- D. Naproxen
- E. Tramadol

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- A. Baclofen (23%)
- ✗ B. Celecoxib (6%)
- C. Diazepam (8%)
- D. Naproxen (10%)
- ✓ E. Tramadol (51%)

Incorrect
Correct answer
E

51%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Serotonin syndrome	
Causes	• Serotonergic medications, especially in combination (eg, SSRI/SNRI, TCA, tramadol) • Drug interactions: Serotonergic medication & MAOI or linezolid • Intentional overdose of serotonergic medications • Serotonergic drugs of abuse (eg, MDMA)

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Clinical features	• Mental status changes (eg, anxiety, agitation, delirium) • Autonomic dysregulation (eg, diaphoresis, hypertension, tachycardia, hyperthermia, vomiting, diarrhea) • Neuromuscular hyperactivity (eg, tremor, myoclonus, hyperreflexia)

MAOI = monoamine oxidase inhibitor; **MDMA** = 3,4-Methylenedioxymethamphetamine; **SNRI** = serotonin-norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor; **TCA** = tricyclic antidepressant.

The symptom constellation of diaphoresis, restlessness, tremors, and diarrhea is characteristic of **serotonin syndrome**, a potentially dangerous condition that results from excess serotonergic activity in the CNS. This patient is currently taking the selective serotonin reuptake inhibitor (SSRI) **citalopram** and was likely prescribed **tramadol**, an opioid analgesic that also has serotonergic activity. Tramadol acts as a mu opioid receptor agonist and serotonin and norepinephrine reuptake inhibitor and, in combination with an SSRI, can potentially cause serotonin syndrome.

Onset of serotonin syndrome typically occurs within the first 24 hours after a change in dose or initiation of a serotonergic medication, and typically presents with the classic triad of **mental status changes**, **autonomic instability,** and **neuromuscular hyperactivity**. In addition, stimulation of serotonin receptors in the gut commonly results in **gastrointestinal symptoms** (eg, diarrhea) and hyperactive bowel sounds. Patients taking SSRIs should be cautioned about the risk of serotonin syndrome when a medication with serotonergic activity is added.

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(Choice A) Baclofen, a selective agonist of the GABA B receptor, works as a skeletal muscle relaxant by inhibiting reflexes at the spinal cord level. Its common adverse effects include sedation and dizziness.

(Choices B and D) Celecoxib and naproxen are nonsteroidal anti-inflammatory drugs commonly used as initial therapy for acute low back pain. Celecoxib is a selective inhibitor of cyclooxygenase-2 (COX-2), whereas naproxen is a nonselective inhibitor of COX-1 and COX-2. Neither drug is associated with serotonin syndrome.

(Choice C) Diazepam is a benzodiazepine that works by binding to GABA A receptors. Benzodiazepines have sedative, anxiolytic, anticonvulsive, and muscle-relaxing properties; adverse effects include impairment of psychomotor performance, amnesia, and dependence.

Educational objective:
Coadministration of tramadol with serotonergic medications such as selective serotonin reuptake inhibitors increases the risk of serotonin syndrome, which presents with the characteristic triad of mental status changes (agitation, confusion), autonomic instability (hyperthermia, diaphoresis), and neuromuscular hyperactivity (tremor,

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Educational objective:
Coadministration of tramadol with serotonergic medications such as selective serotonin reuptake inhibitors increases the risk of serotonin syndrome, which presents with the characteristic triad of mental status changes (agitation, confusion), autonomic instability (hyperthermia, diaphoresis), and neuromuscular hyperactivity (tremor, myoclonus).

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A 14-year-old girl is brought to the office by her parents for a sports participation examination. The patient is a competitive figure skater and practices before and after school 5 days a week. Her parents are concerned because she recently announced that she will eat only a vegetarian diet, and they are having difficulty providing an adequate variety of meat-free food options around her busy school and athletic training schedule. The patient is otherwise healthy; menarche occurred at age 12 and she has regular menstrual cycles. Vital signs are normal. BMI is 17 kg/m^2. Physical examination is normal for age. Which of the following is the most appropriate next step in management of this patient?

- A. Advise the patient to consume a protein supplement and multivitamin to support her athletic activity
- B. Ask the patient to explain her reasons for wanting to change to a vegetarian diet
- C. Explore the parents' beliefs regarding the benefits and risks of vegetarian diets
- D. Provide education to the family regarding vegetarian meal planning
- E. Reassure the parents that the patient is healthy, and no intervention is necessary at this time

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- A. Advise the patient to consume a protein supplement and multivitamin to support her athletic activity (10%)
- ✓ B. Ask the patient to explain her reasons for wanting to change to a vegetarian diet (50%)
- C. Explore the parents' beliefs regarding the benefits and risks of vegetarian diets (14%)
- D. Provide education to the family regarding vegetarian meal planning (22%)
- E. Reassure the parents that the patient is healthy, and no intervention is necessary at this time (2%)

Correct

50% Answered correctly

06 secs Time Spent

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Explanation

Clinical clues suggesting an eating disorder	
	• Rapid or unexpected weight loss • Compensatory behaviors (eg, fasting, excessive exercise, purging, laxatives)

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Clinical clues suggesting an eating disorder	
History	• Rapid or unexpected weight loss • Compensatory behaviors (eg, fasting, excessive exercise, purging, laxatives) • Unexplained gastrointestinal symptoms (eg, nausea, diarrhea) • Secondary amenorrhea
Examination	• Hypothermia, hypotension, bradycardia • Abnormal hair growth (eg, lanugo) • Parotid hypertrophy, knuckle callouses, dental caries
Psychological interview	• Abnormal fear of weight gain • Distorted body image (discordant with BMI) • Preoccupation with body shape & fat content • Anxiety/distress regarding meal planning & preparation

This adolescent girl has recently adopted a vegetarian diet, which is causing concern for her parents. Such **changes in eating habits** are common in adolescents and are often due to benign reasons (eg, wanting to eat "healthy" or improve athletic performance, concerns about animals, desire to identify with a role model or peer group). However, an **eating disorder** (eg, anorexia nervosa) **should also be considered**, especially in a patient with a **low or low-normal BMI** (or involvement in an activity that emphasizes leanness).

The next step in evaluating this patient is to directly but nonjudgmentally **inquire about her motivations** for vegetarianism. As when discussing any sensitive topic with adolescents, she may best be interviewed alone, without her parents present. If no worrisome features (eg, preoccupation with weight, abnormal body image) are found or new complications (eg, amenorrhea) develop, she can be followed clinically without additional specific intervention.

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(Choice A) Patients on a vegetarian diet should be advised to consume a variety of foods; intake of nonmeat animal-derived foods (eg, eggs, dairy) can often facilitate adequate intake of protein and micronutrients. However, additional supplements are not usually necessary unless specific deficiencies (eg, iron deficiency) develop.

(Choices C and D) If no signs of an eating disorder are found on detailed discussion with the patient, her parents may be reassured about the nutritional adequacy of a varied, balanced vegetarian diet, although education regarding healthy meal planning may be helpful. However, optimal family counseling first requires a better understanding of this patient's motivations.

(Choice E) This patient appears to have normal growth, development, and physical examination findings. However, additional information about the patient's attitudes toward eating, weight, and body image is needed before ruling out an eating disorder and reassuring the parents.

Educational objective:
Abrupt dietary and other behavioral changes are common in adolescents and are often due to benign reasons. However, an eating disorder (eg, anorexia nervosa) should also be considered, especially in a patient with a low or low-normal BMI.

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A 6-year-old boy is brought to the office by his mother due to behavioral difficulties at school. His teacher has said, "He interrupts the class, doesn't listen, and cannot sit still for more than a few minutes." He has been sent home on a few occasions for hitting other children and taking their toys. The patient was adopted at age 6 months and his birth history is unknown. He runs around the office playing with various toys and is easily distracted. Vital signs are within normal limits. Weight and height are tracking on the 10th percentile, and head circumference is below the 5th percentile for age and sex. Physical examination reveals short palpebral fissures, a smooth philtrum, thin upper lip, and difficulty with both gross and fine motor coordination. Which of the following is the likely cause of this patient's condition?

- A. CGG trinucleotide repeat
- B. Intrauterine alcohol exposure
- C. Intrauterine cocaine exposure
- D. Intrauterine rubella exposure
- E. Trisomy 18
- F. Trisomy 21

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A 6-year-old boy is brought to the office by his mother due to behavioral difficulties at school. His teacher has said, "He interrupts the class, doesn't listen, and cannot sit still for more than a few minutes." He has been sent home on a few occasions for hitting other children and taking their toys. The patient was adopted at age 6 months and his birth history is unknown. He runs around the office playing with various toys and is easily distracted. Vital signs are within normal limits. Weight and height are tracking on the 10th percentile, and head circumference is below the 5th percentile for age and sex. Physical examination reveals short palpebral fissures, a smooth philtrum, thin upper lip, and difficulty with both gross and fine motor coordination. Which of the following is the likely cause of this patient's condition?

- A. CGG trinucleotide repeat (1%)
- ✓ B. Intrauterine alcohol exposure (87%)
- C. Intrauterine cocaine exposure (1%)
- D. Intrauterine rubella exposure (0%)
- E. Trisomy 18 (1%)
- F. Trisomy 21 (7%)

Correct

87% Answered correctly

06 secs Time Spent

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Explanation

Fetal alcohol syndrome

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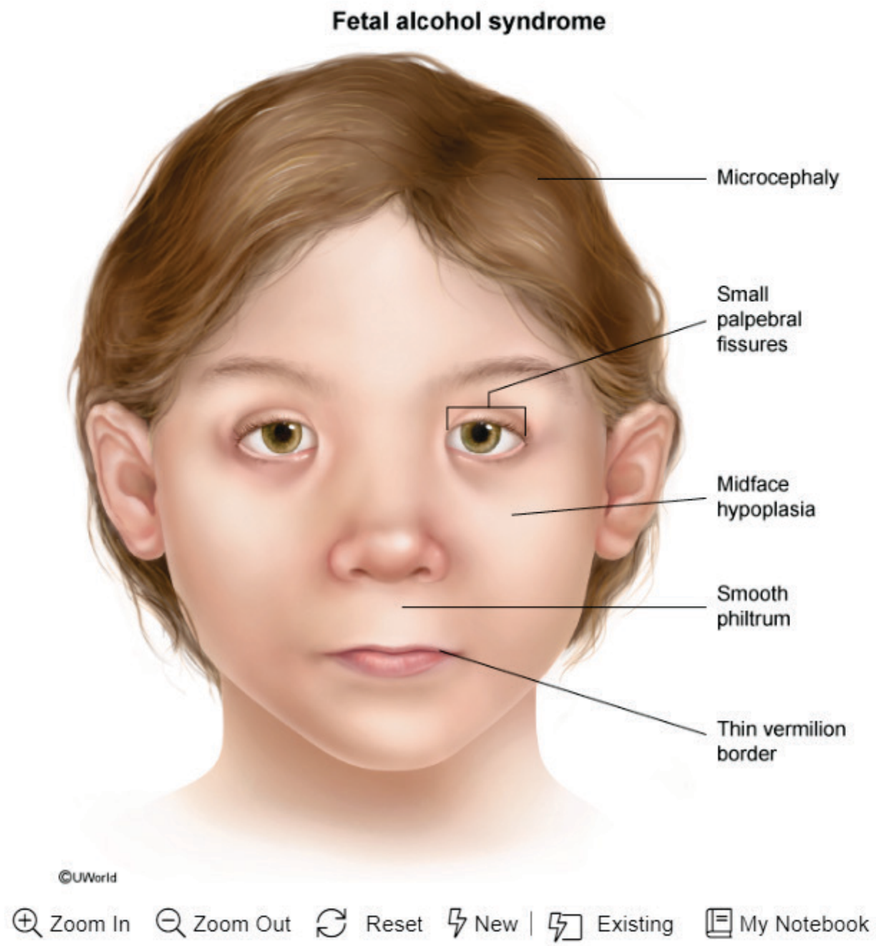
A. CGG trinucleotide repeat (1%)

Exhibit Display



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This child's behavioral difficulties (distractibility, hyperactivity, hitting), growth retardation, poor coordination, and facial anomalies are suggestive of **fetal alcohol syndrome (FAS)**. Alcohol is a teratogen that affects multiple organ systems (eg, heart, joints, kidneys, visual systems, auditory systems), most characteristically the CNS. Features of FAS include **facial dysmorphism** (short palpebral fissures, thin upper lip, smooth philtrum), **growth retardation**, and **CNS involvement** (structural and/or neurobehavioral).

Intrauterine alcohol exposure can cause reduction in the volume of the caudate, striatum, thalamus, and cerebellum, resulting in abnormal reflexes, tone, and coordination. A decrease in the volume of the frontal lobe and dysfunction of the amygdala contribute to deficits in executive functioning, impulse control, and emotion regulation. Other **neurobehavioral manifestations** include cognitive impairment, learning disabilities, and social skill deficits.

(Choice A) Fragile X syndrome is caused by unstable CGG (cytosine-guanine-guanine) trinucleotide repeats on the X chromosome. Features include intellectual disability; a long, narrow face; large, protruding ears; macrocephaly; and macroorchidism.

(Choice C) Cocaine exposure in utero is associated with hypertonia and tremors in neonates and impairments in attention, language development, and behavioral regulation in school-aged children. It would not cause the facial anomalies seen in this patient.

(Choice D) Rubella exposure in utero is associated with congenital heart defects, hearing impairment, and ocular abnormalities (eg, glaucoma, cataracts, retinopathy).

(Choice E) Trisomy 18 (Edwards syndrome) is associated with a small mouth and prominent forehead; pointy ears; and flexed, overlapping fingers. Horseshoe kidney and congenital heart defects may be present. Survival beyond one year of age is uncommon and associated with severe intellectual disability.

(Choice F) Facial features in trisomy 21 (Down syndrome) include epicanthal folds, upslanting palpebral fissures, brachycephaly (back of the head symmetrically flattened), flat nasal bridge, and protruding tongue. It is associated with varying degrees of intellectual disability.

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Educational objective:
Typical features of fetal alcohol syndrome include facial dysmorphism (short palpebral fissures, thin upper lip, smooth philtrum), growth retardation, neurological abnormalities, and behavioral difficulties.

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A 9-year-old boy is brought to the pediatrician due to poor school performance and difficulty making friends. His parents say he always had "very high energy," but they noticed that this got worse after they moved 8 months ago, which they attributed to a normal adjustment period. Over the past several months, however, the parents have received repeated phone calls from his teachers, reporting that he does not listen in class, has difficulty staying in his seat, turns in assignments late without his name, and frequently disrupts the class by talking out of turn. At home the boy forgets to do his daily chores, regularly loses his books and homework, and delays the family by taking too long getting ready for school in the morning. When his older brother teases him about this, the patient becomes irritable, and on a few occasions has shouted profanities and tried to hit his brother. Which of the following is the most likely explanation for this patient's behavior?

- A. Adjustment disorder
- B. Attention-deficit hyperactivity disorder
- C. Conduct disorder
- D. Social anxiety disorder
- E. Oppositional defiant disorder

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- A. Adjustment disorder (5%)
- ✓ B. Attention-deficit hyperactivity disorder (79%)
- C. Conduct disorder (4%)
- D. Social anxiety disorder (0%)
- E. Oppositional defiant disorder (9%)

Correct

79% Answered correctly

04 secs Time Spent

2023 Version

Explanation

Attention deficit hyperactivity disorder	
	• Inattentive &/or hyperactive/impulsive symptoms for ≥6 months

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Attention deficit hyperactivity disorder	
Clinical features	• Inattentive &/or hyperactive/impulsive symptoms for ≥6 months ◦ **Inattentive symptoms:** difficulty focusing, distractible, does not listen or follow instructions, disorganized, forgetful, loses/misplaces objects ◦ **Hyperactive/impulsive symptoms:** fidgety, unable to sit still, "driven by a motor," hypertalkative, interrupts, blurts out answers • Several symptoms present **before age 12** • Symptoms occur in at least 2 settings (home, school) & cause functional impairment • Subtypes: predominantly inattentive, predominantly hyperactive/impulsive, combined type

Attention-deficit hyperactivity disorder (ADHD) is a common behavioral disorder characterized by a persistent pattern of inattention and/or hyperactivity/impulsivity that interferes with functioning in **≥2 settings** (eg, school, home). Diagnosis requires the presence of symptoms **before age 12** with ≥6 inattentive and/or hyperactive/impulsive symptoms for ≥6 months. This patient's combination of **inattentive** symptoms (ie, forgetful, disorganized, loses things) and **hyperactive/impulsive** symptoms (ie, difficulty staying seated, interrupts others) is characteristic of the combined subtype. ADHD is more common in boys; girls are more likely to have the inattentive subtype.

(Choice A) Adjustment disorders are diagnosed when symptoms develop within 3 months of an identifiable stressor. This child's symptoms predated the family move.

(Choice C) Although this child occasionally tries to hit his sibling when frustrated, he does not exhibit behavior that consistently violates major societal norms or the basic rights of others (eg, repeated aggression, property destruction, theft, deceitfulness, rule violations), which would characterize conduct disorder.

(Choice D) Children with ADHD often experience difficulty with peer relationships due to their impulsive and disruptive behaviors. However, this child does not exhibit the excessive social anxiety and fear of negative peer

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(Choice D) Children with ADHD often experience difficulty with peer relationships due to their impulsive and disruptive behaviors. However, this child does not exhibit the excessive social anxiety and fear of negative peer evaluation that is characteristic of social anxiety disorder.

(Choice E) Oppositional defiant disorder (ODD) involves a pattern of angry/irritable mood and argumentative/defiant behavior toward authority figures or vindictiveness. Although ODD may occur as a comorbid diagnosis with ADHD, this child's difficulty completing tasks, inability to sit still, and interrupting others at school are more likely related to his ADHD symptoms than to willfully defiant behavior.

Educational objective:
Attention-deficit hyperactivity disorder is characterized by a pattern of inattention and/or hyperactivity/impulsivity that interferes with functioning in ≥2 settings.

References

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A 48-year-old man comes to the office due to concern that his skin is excessively dry, red, and cracked. The patient explains that he washes his hands each time he touches something due to fear of contamination. He spends 3-4 hours a day washing his hands and showers multiple times daily. He was recently fired from his job after refusing to touch keyboards shared by coworkers and is worried that he will be unable to find employment. On physical examination, the palms are erythematous with peeling skin. Treatment of this patient's disorder is most likely to involve a medication affecting which of the following neurotransmitters?

- A. Acetylcholine
- B. Dopamine
- C. Gamma-aminobutyric acid
- D. Glutamate
- E. Glycine
- F. Histamine
- G. Norepinephrine
- H. Serotonin

Submit

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- A. Acetylcholine (0%)
- ✗ B. Dopamine (4%)
- C. Gamma-aminobutyric acid (3%)
- D. Glutamate (1%)
- E. Glycine (0%)
- F. Histamine (0%)
- G. Norepinephrine (2%)
- ✓ H. Serotonin (87%)

Incorrect
Correct answer
H

87%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

Obsessive-compulsive disorder

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Obsessive-compulsive disorder	

Clinical features	• **Obsessions**
	  ◦ Recurrent, intrusive, anxiety-provoking thoughts, urges, or images
	• **Compulsions**
	  ◦ Response to obsessions with repeated behaviors or mental acts
	  ◦ Behaviors not connected realistically with preventing feared event
	• Time-consuming (>1 hr/day) or causing significant distress or impairment

Treatment	• Selective serotonin reuptake inhibitor • Cognitive-behavioral therapy (exposure & response prevention)

This patient's fear of contamination leading to compulsive washing rituals is consistent with **obsessive-compulsive disorder** (OCD). OCD is characterized by obsessions or compulsions, with most patients experiencing both. Common themes include contamination obsessions with cleaning compulsions; obsession with symmetry and compulsions involving ordering and counting; and fear of harm with checking compulsions (eg, stove off, doors locked). Patients with OCD typically engage in time-consuming rituals (>1 hr/day) that cause significant distress and/or functional impairment. Patients with washing compulsions may present with skin conditions.

Selective serotonin reuptake inhibitor (SSRI) antidepressants are considered first-line treatment for OCD. SSRIs block the reuptake of serotonin into the presynaptic neuron, leading to an immediate increase in availability of synaptic serotonin and a subsequent cascade of downstream neurobiological effects.

(Choice A) In the central nervous system, acetylcholine is involved primarily in arousal, memory, and learning. Degeneration of cholinergic neurons is associated with Alzheimer dementia.

(Choices B and D) There is evidence for dysfunction of the dopamine and glutamate (primary excitatory

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(Choice A) In the central nervous system, acetylcholine is involved primarily in arousal, memory, and learning. Degeneration of cholinergic neurons is associated with Alzheimer dementia.

(Choices B and D) There is evidence for dysfunction of the dopamine and glutamate (primary excitatory neurotransmitter) systems in the pathogenesis of OCD; however, neither neurotransmitter is a significant target of first-line medications.

(Choices C and E) Gamma-aminobutyric acid is the primary inhibitory neurotransmitter in the central nervous system and is involved in the anti-anxiety effects of benzodiazepines. Glycine is also an inhibitory neurotransmitter.

(Choice F) Histamine is a neurotransmitter involved in maintaining wakefulness and, as a result, drugs with antihistamine properties may be sedating.

(Choice G) Norepinephrine is a catecholamine involved in mood, anxiety, alertness, learning, and memory.

Educational objective:
Obsessive-compulsive disorder (OCD) is characterized by persistent, intrusive thoughts leading to repetitive,

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experiencing both. Common themes include contamination obsessions with cleaning compulsions; obsession with symmetry and compulsions involving ordering and counting; and fear of harm with checking compulsions (eg, stove off, doors locked). Patients with OCD typically engage in time-consuming rituals (>1 hr/day) that cause significant distress and/or functional impairment. Patients with washing compulsions may present with skin conditions.

Selective serotonin reuptake inhibitor (SSRI) antidepressants are considered first-line treatment for OCD. SSRIs block the reuptake of serotonin into the presynaptic neuron, leading to an immediate increase in availability of synaptic serotonin and a subsequent cascade of downstream neurobiological effects.

(Choice A) In the central nervous system, acetylcholine is involved primarily in arousal, memory, and learning. Degeneration of cholinergic neurons is associated with Alzheimer dementia.

(Choices B and D) There is evidence for dysfunction of the dopamine and glutamate (primary excitatory neurotransmitter) systems in the pathogenesis of OCD; however, neither neurotransmitter is a significant target of first-line medications.

(Choices C and E) Gamma-aminobutyric acid is the primary inhibitory neurotransmitter in the central nervous system and is involved in the anti-anxiety effects of benzodiazepines. Glycine is also an inhibitory neurotransmitter.

(Choice F) Histamine is a neurotransmitter involved in maintaining wakefulness and, as a result, drugs with antihistamine properties may be sedating.

(Choice G) Norepinephrine is a catecholamine involved in mood, anxiety, alertness, learning, and memory.

Educational objective:
Obsessive-compulsive disorder (OCD) is characterized by persistent, intrusive thoughts leading to repetitive, ritualistic behaviors. Selective serotonin reuptake inhibitors are considered first-line treatment for OCD and exert their effects by inhibiting serotonin reuptake.

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A 44-year-old man comes to the office due to fatigue for the past 6 months. He says, "I've fallen asleep at work a few times, and I really have to push myself to concentrate. I can't seem to get a good night's sleep either because I keep waking up." The patient feels guilty that he has been spending less time with his kids due to feeling tired and states his mood has been low the past week. He worries that his wife is annoyed with him because he has not been helping with household chores as much and keeps her up at night due to his snoring. The patient drinks 3 or 4 beers a week and does not use tobacco or illicit drugs. Medical history is noncontributory. Blood pressure is 146/94 mm Hg and pulse is 78/min and regular. BMI is 32 kg/m^2. Which of the following is the most likely diagnosis?

- A. Major depressive disorder
- B. Narcolepsy
- C. Obstructive sleep apnea
- D. Primary insomnia
- E. Somatic symptom disorder

Submit

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- A. Major depressive disorder (7%)
- ✕ B. Narcolepsy (4%)
- ✓ C. Obstructive sleep apnea (84%)
- D. Primary insomnia (3%)
- E. Somatic symptom disorder (0%)

Incorrect
Correct answer
C

84%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

Obstructive sleep apnea	
Pathophysiology	• Relaxation of pharyngeal muscles, leading to closure of airway • Loud snoring with periods of apnea

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Obstructive sleep apnea	
Pathophysiology	• Relaxation of pharyngeal muscles, leading to closure of airway • Loud snoring with periods of apnea
Symptoms	• Daytime somnolence • Nonrestorative sleep with frequent awakenings • Morning headaches • Affective & cognitive symptoms
Sequelae	• Systemic hypertension • Pulmonary hypertension & right-sided heart failure

This patient's **snoring**, repetitive **awakenings**, excessive **daytime tiredness**, elevated blood pressure, **obesity**, and male sex are strongly suggestive of **obstructive sleep apnea** (OSA). Other associated features include sleep-related apnea/choking spells and morning headaches.

OSA may also present with **depressive symptoms**, such as low mood, decreased energy, and impaired concentration, and should be ruled out before diagnosing a primary depressive disorder. The patient's bed partner should be asked about snoring, as well as breathing pauses and nocturnal gasping or choking. Diagnosis is confirmed by polysomnography demonstrating obstructive respiratory events.

(Choice A) This patient has insufficient symptoms for a diagnosis of major depressive disorder because he has had low mood for a week and does not describe anhedonia. His sleep disturbance, fatigue, and impaired concentration began prior to his mood changes and are better explained by untreated OSA.

(Choice B) Narcolepsy may also cause excessive daytime sleepiness. However, it typically presents in younger patients and is associated with cataplexy, hypnagogic/hypnopompic hallucinations, and sleep paralysis.

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Sequelae	• Pulmonary hypertension & right-sided heart failure

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(Choice B) Narcolepsy may also cause excessive daytime sleepiness. However, it typically presents in younger patients and is associated with cataplexy, hypnagogic/hypnopompic hallucinations, and sleep paralysis.

(Choice D) The combination of restless sleep and excessive daytime somnolence in a patient with multiple risk factors for OSA is less consistent with primary insomnia, which would be appropriate when sleep-related symptoms are not better explained by another sleep disorder, psychiatric disorder, or drugs/medications.

(Choice E) Although symptoms of somatic symptom disorder may include daily, severe fatigue, this patient does not appear to have health-related anxiety (eg, fears about the medical seriousness of physical symptoms), which is necessary for diagnosis.

Educational objective:
Obstructive sleep apnea is characterized by sleep-related apnea/choking spells, loud snoring, disrupted sleep, excessive daytime somnolence, and symptoms that may overlap with depression (eg, low mood, fatigue, impaired concentration).

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Sequelae	• Pulmonary hypertension & right-sided heart failure

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Exhibit Display

Major depressive disorder	

Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure):
	  ◦ Depressed mood
	  ◦ Loss of interest or pleasure
	  ◦ Change in appetite or weight
	  ◦ Insomnia or hypersomnia
	  ◦ Psychomotor retardation or agitation
	  ◦ Low energy
	  ◦ Poor concentration or indecisiveness
	  ◦ Thoughts of worthlessness or inappropriate guilt
	  ◦ Recurrent thoughts of death or suicide
	• No history of mania or hypomania
	• Not due to substances or another medical condition

New | Existing My Notebook

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A 24-year-old man is brought to the emergency department by police and emergency medical services personnel due to aggressive behavior toward his girlfriend. She reports that he has no history of medical or psychiatric illness and that this behavior is new. During transport, the patient was combative and difficult to restrain. He currently appears agitated, disoriented, and confused and seems to be responding to internal stimuli. Temperature is 37.2 C (99 F), blood pressure is 170/96 mm Hg, pulse is 118/min, and respirations are 20/min. Nystagmus and ataxia are present on initial neurologic examination. The patient does not cooperate with urine toxicology testing. His symptoms begin to resolve after 8 hours in the emergency department. He has very poor recollection of the previous night's events. Which of the following substances is most likely causing the constellation of symptoms seen in this patient?

- A. Cocaine
- B. Diazepam
- C. Heroin
- D. Lysergic acid diethylamide
- E. Methamphetamine
- F. Phencyclidine
- G. Tetrahydrocannabinol

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- A. Cocaine (7%)
- ✗ B. Diazepam (0%)
- C. Heroin (2%)
- D. Lysergic acid diethylamide (9%)
- E. Methamphetamine (8%)
- ✓ F. Phencyclidine (71%)
- G. Tetrahydrocannabinol (0%)

Incorrect
Correct answer
F

71%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

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Acute drug intoxication		
Drug	**Class**	**Clinical features**
PCP (phencyclidine)	Hallucinogen	• Violent behavior • Dissociation • Hallucinations • Amnesia • **Nystagmus** (horizontal or vertical) • Ataxia
LSD	Hallucinogen	• **Visual hallucinations** • Euphoria • Dysphoria/panic • Tachycardia/hypertension
Cocaine	Stimulant	• Euphoria • Agitation/psychosis • **Chest pain** • **Seizures** • Tachycardia/hypertension • **Mydriasis**
Methamphetamine	Stimulant	• Violent behavior • Psychosis, diaphoresis • Tachycardia/hypertension • Choreiform movements • Tooth decay

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		• Tachycardia/hypertension
Cocaine	Stimulant	• Euphoria • Agitation/psychosis • **Chest pain** • **Seizures** • Tachycardia/hypertension • **Mydriasis**
Methamphetamine	Stimulant	• Violent behavior • Psychosis, diaphoresis • Tachycardia/hypertension • Choreiform movements • Tooth decay
Marijuana (THC, cannabis)	Cannabinoid	• Increased appetite • Euphoria • Dysphoria/panic • Slow reflexes, impaired time perception • Dry mouth • **Conjunctival injection**
Heroin	Opioid	• Euphoria • **Depressed mental status** • **Miosis** • **Respiratory depression** • Constipation
THC = tetrahydrocannabinol.		

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THC = tetrahydrocannabinol.

This patient's combative behavior, confusion, poor judgment, memory loss, and hallucinations, accompanied by nystagmus and ataxia on physical examination, are consistent with **phencyclidine (PCP)** intoxication. PCP is a hallucinogen that works primarily as an **N-methyl-D-aspartate glutamate receptor antagonist**, as well as a monoamine reuptake inhibitor. PCP was originally developed as an anesthetic, but its use was discontinued due to its adverse effects in humans.

Moderate amounts of PCP cause **dissociative symptoms**, including detachment and withdrawal. At higher doses, it can induce agitation, **hallucinations**, and **violent behavior**. Ataxia and **nystagmus** (both horizontal and vertical) are other distinguishing symptoms of PCP abuse. Hospital urine toxicology screens usually test for PCP.

(Choice A) Signs and symptoms of cocaine intoxication include tachycardia, hypertension, blurry vision, euphoria, and agitation, typically lasting ≤1 hour. Ischemic effects (eg, myocardial infarction, stroke) can occur due to severe vasoconstriction.

(Choice B) The benzodiazepine diazepam is a central nervous system depressant that produces mild euphoria and relaxation and has significant abuse potential. Intoxication can cause mild amnesia, sedation, slurred speech, respiratory depression, hypotension, and bradycardia.

(Choice C) Heroin intoxication can produce euphoria, lethargy, and coma. Examination shows constricted pupils, decreased bowel sounds, low-normal blood pressure and heart rate, and life-threatening respiratory depression.

(Choice D) Lysergic acid diethylamide (LSD) is a potent hallucinogen with unpredictable effects, including euphoria, depersonalization, and visual illusions. Most patients are oriented and perceive that the effects are due to the drug ingestion. Nystagmus is not present.

(Choice E) Intoxication with the stimulant methamphetamine causes tachycardia, hypertension, agitation, diaphoresis, and hallucinations. Violent behavior may also be seen with its abuse, but nystagmus is less common. Methamphetamine intoxication typically lasts for up to 20 hours, longer than intoxication with PCP.

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(Choice G) Marijuana is a cannabinoid that produces euphoria and perceptual distortions. Other findings include increased appetite, red eyes, slowed reflexes, dizziness, and impaired coordination. Nystagmus is not common.

Educational objective:
Phencyclidine (PCP) is a hallucinogen that causes dissociative symptoms, agitation, hallucinations, and violent behavior. Ataxia, nystagmus, and memory loss are other distinguishing symptoms of PCP abuse.

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A 20-year-old college student is brought to the emergency department by his roommate. The patient is frightened and claims that campus police are following him and plotting to kill him. His roommate says that the patient seemed "totally normal" until a few days ago, when he began to stay up all night to prepare for final exams. The patient has no known medical or psychiatric history, but his father has schizophrenia. Blood pressure is 150/95 mm Hg and pulse is 110/min. Examination shows clear lungs and tachycardia with normal S1 and S2. The abdomen is soft and nontender. Extraocular movements are intact, and the pupils are dilated. The patient is diaphoretic. He appears hypervigilant, paces during the examination, and has mildly pressured speech. Which of the following is the most likely diagnosis in this patient?

- A. Bipolar disorder, manic episode
- B. Brief psychotic disorder
- C. Delusional disorder
- D. Schizophreniform disorder
- E. Substance-induced psychotic disorder

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- A. Bipolar disorder, manic episode (4%)
- ✗ B. Brief psychotic disorder (19%)
- C. Delusional disorder (2%)
- D. Schizophreniform disorder (3%)
- ✓ E. Substance-induced psychotic disorder (70%)

Incorrect
Correct answer
E

70%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

The misuse of stimulants by college students to enhance academic performance is prevalent. This patient's acute onset of paranoia, restlessness, and hypervigilance, and physical signs of **mydriasis**, tachycardia, hypertension, and diaphoresis, are most likely due to **stimulant intoxication**. Transient paranoid psychosis can develop in intoxication with all major stimulants, including prescription medications for attention-deficit hyperactivity disorder

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Substance-induced psychotic disorders must be differentiated from primary psychiatric disorders such as bipolar manic episodes and psychotic disorders. This student's prominent physical signs and lack of psychiatric history, combined with the temporal association between staying up to study and acute onset of psychosis, make a stimulant-induced psychotic disorder more likely.

(Choice A) Patients experiencing a bipolar manic episode can also have decreased sleep, pressured speech, physical restlessness, and psychotic features. However, the temporal association of studying for exams and the patient's abnormal vital signs, mydriasis, and diaphoresis make substance intoxication more likely.

(Choice B) Primary psychotic disorders are diagnoses of exclusion that require ruling out substance use and medical etiologies. Brief psychotic disorder is a rare condition characterized by acute onset of ≥1 psychotic symptoms (eg, delusions, hallucinations, disorganized speech or behavior) lasting ≥1 days but <1 month, with eventual complete resolution. This patient's physical findings (ie, mydriasis, tachycardia, hypertension, diaphoresis), the prevalence of stimulant misuse on college campuses, and the temporal association between intense studying and symptom onset make substance-induced psychosis much more likely than brief psychotic disorder.

(Choices C and D) These diagnoses would not be considered at this point due to insufficient duration of psychotic symptoms. The essential feature of delusional disorder is ≥1 delusions lasting ≥1 months without other psychotic symptoms. Schizophreniform disorder involves ≥2 psychotic symptoms lasting ≥1 months but <6 months.

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and diaphoresis, are most likely due to **stimulant intoxication**. Transient paranoid psychosis can develop in intoxication with all major stimulants, including prescription medications for attention-deficit hyperactivity disorder (eg, amphetamines, methylphenidate). **Substance-induced psychotic disorder** is diagnosed when stimulant intoxication presents with prominent psychotic symptoms.

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Educational objective:
Stimulant intoxication can present with paranoid ideation and must be differentiated from primary psychiatric disorders. Physical signs of stimulant intoxication include mydriasis, tachycardia, hypertension, and diaphoresis.

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A 35-year-old woman is hospitalized following a high-speed motor vehicle collision in which she was an unrestrained passenger. She sustained multiple deep lacerations on her extremities, rib contusions, and a complex humerus fracture requiring surgical fixation. Over the next 2 days, the patient's pain is treated with oral morphine every 6 hours and nonsteroidal anti-inflammatory drugs (NSAIDs) every 4 hours. Her pain is controlled with this regimen but recurs if the interval between morphine doses is extended to 8 hours. The patient is otherwise medically stable for discharge. She is concerned about continuing to use narcotics at home to treat her pain because her cousin had a history of opioid use disorder and passed away several years earlier due to an overdose. Which of the following actions by the physician is most appropriate?

- A. Administer opioids transdermally rather than orally to reduce addiction risk
- B. Continue opioid therapy but monitor the patient in the hospital
- C. Recommend benzodiazepines as they are less likely to result in addiction
- D. Recommend NSAIDs only for pain control given the patient's high risk of addiction
- E. Prescribe a brief course of opioids to be used only for breakthrough pain

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- A. Administer opioids transdermally rather than orally to reduce addiction risk (10%)
- ✗ B. Continue opioid therapy but monitor the patient in the hospital (4%)
- C. Recommend benzodiazepines as they are less likely to result in addiction (2%)
- D. Recommend NSAIDs only for pain control given the patient's high risk of addiction (9%)
- ✓ E. Prescribe a brief course of opioids to be used only for breakthrough pain (72%)

Incorrect
Correct answer
E

72%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Strategies for safe opioid prescribing	
Optimize non-opioid interventions	• Use acetaminophen/NSAIDs, supportive care (eg, heat/ice) for mild/moderate pain

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Strategies for safe opioid prescribing	
Optimize non-opioid interventions	• Use acetaminophen/NSAIDs, supportive care (eg, heat/ice) for mild/moderate pain • Avoid routine opioid use for chronic pain
Optimize opioid dose and duration	• Limit therapy to <5 days for acute pain • Use lowest dose resulting in adequate pain control • Avoid long-acting opioids
Optimize monitoring	• Counsel patients on safe use; arrange close follow-up • Educate patients on safe disposal of unused opioids
NSAIDs = nonsteroidal anti-inflammatory drugs.	

Harm from opioid use (eg, overdose, addiction) represents a major patient safety concern and is the leading cause of injury-related death in young adults. Physicians should prescribe opioids only when indicated and **minimize dose and duration of therapy**. This patient's **acute**, **post-traumatic pain**, which is uncontrolled with NSAIDS alone (eg, she experiences breakthrough pain), is an appropriate indication for opioid therapy. Most patients with traumatic or postoperative pain have significant improvement within the **first 3-5 days** and may be prescribed a **limited** quantity of opioid medication with **low risk of addiction**.

When prescribing opioids, physicians should apply the following strategies to promote safety and minimize potential harms:

- Prescribe a **brief** course of therapy (eg, 3-5 days), as risk of long-term opioid use in opioid-naïve patients increases after 5 days
- Prescribe short-acting opioids (eg, hydrocodone, oxycodone) **only for breakthrough** pain (ie, instead of around-the-clock dosing)

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- Prescribe short-acting opioids (eg, hydrocodone, oxycodone) **only for breakthrough** pain (ie, instead of around-the-clock dosing)
- Maximize concurrent non-opioid therapies (eg, NSAIDs, heat, stretching), which increase complementary analgesic effects and reduce opioid requirements

In addition, patients should receive close outpatient follow-up for pain reassessment, along with proper counseling on safe opioid use and disposal of excess medications.

(Choice A) Transdermal opioids (eg, fentanyl) have similar pharmacodynamic properties as oral opioids and carry a similar risk of misuse and addiction. In general, transdermal and other long-acting opioid preparations are not recommended for acute pain in opioid-naïve patients.

(Choice B) The patient is medically stable for discharge. Extending the hospitalization is unlikely to provide additional benefit, may increase harms (eg, iatrogenic infections), and represents inappropriate resource use.

(Choice C) Benzodiazepines have negligible analgesic benefits and also carry a risk of addiction.

(Choice D) Because this patient's family history of opioid use disorder involved a cousin rather than a first-degree

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(Choice C) Benzodiazepines have negligible analgesic benefits and also carry a risk of addiction.

(Choice D) Because this patient's family history of opioid use disorder involved a cousin rather than a first-degree relative, her personal risk of addiction is not significantly increased. Moreover, using only NSAIDs is likely to undertreat her pain; limited use of short-acting opioids for breakthrough pain is more appropriate.

Educational objective:
Most patients with acute pain (eg, trauma, post-operation) have significant improvement within 3-5 days and may be prescribed a brief course of opioid medication for breakthrough pain with low risk of addiction. Physicians should minimize opioid duration and dose, counsel patients on proper use, and maximize concurrent non-opioid therapies (eg, NSAIDs).

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A 9-year-old girl is brought to the office by her mother for evaluation of frequent stomach aches. The mother says that her daughter has always had a "sensitive stomach" but that it has gotten worse since she started going to a new school a few months ago. The girl has been missing class due to being in the nurse's office multiple times per week. The patient's symptoms improve when her mother comes to get her. In response to the doctor's questions about the girl's peer relationships, the mother replies, "She has friends but never enjoys sleepovers." When the patient is at a friend's house, she often complains of stomach pain and nausea. She occasionally has nightmares about being left alone and wakes up crying. Although both parents are healthy, the patient says she worries about them "dying of a terrible illness, like cancer." Abdominal examination shows no abnormalities. Which of the following is the most likely diagnosis in this patient?

- A. Adjustment disorder with anxious mood
- B. Dependent personality disorder
- C. Generalized anxiety disorder
- D. Illness anxiety disorder
- E. Separation anxiety disorder
- F. Social anxiety disorder
- G. Somatic symptom disorder

Submit

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- A. Adjustment disorder with anxious mood (3%)
- ✗ B. Dependent personality disorder (3%)
- C. Generalized anxiety disorder (2%)
- D. Illness anxiety disorder (2%)
- ✓ E. Separation anxiety disorder (81%)
- F. Social anxiety disorder (2%)
- G. Somatic symptom disorder (4%)

Incorrect
Correct answer
E

81%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

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Although separation anxiety is common in young children and in older children at times of change or stress, this patient's distress is excessive and impairing when she is separated from her mother. Her inability to sleep away from home, abdominal pain when separated from her mother, worries about losing her parents, and nightmares about being left alone are consistent with **separation anxiety disorder**. Children with this disorder commonly experience **physical symptoms** (eg, headaches, stomach aches, nausea) when separation occurs or is anticipated, and have repeated **nightmares** involving the theme of separation. According to DSM-5, symptoms must be present for ≥4 weeks in children and ≥6 months in adults.

(Choice A) This girl's symptoms predate the stressor of starting a new school. In addition, adjustment disorders are not diagnosed when symptoms better meet the criteria for another disorder. As in this patient, stressful events often exacerbate symptoms of another disorder.

(Choice B) Patients with dependent personality disorder fear being left alone and seek out others to support and assume responsibility for them. However, personality disorders are not diagnosed in children as their personalities are still developing.

(Choice C) Generalized anxiety disorder involves chronic anxiety regarding multiple issues. This patient's symptoms occur in the context of separation, making separation anxiety disorder the appropriate diagnosis.

(Choice D) This child's fears focus on her parents becoming ill, causing her to be left alone. Illness anxiety disorder is diagnosed in individuals who excessively worry about having a specific illness themselves.

(Choice F) Social anxiety disorder is considered when anxiety and avoidance of social settings are due to worry about being viewed negatively by others. This child fears separation from her parents, not social rejection.

(Choice G) Patients with somatic symptom disorder have an ongoing preoccupation with physical symptoms; their anxiety is primarily related to their physical symptoms and health. This child's somatic symptoms are an expression of anxiety due to separation from attachment figures.

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(Choice G) Patients with somatic symptom disorder have an ongoing preoccupation with physical symptoms; their anxiety is primarily related to their physical symptoms and health. This child's somatic symptoms are an expression of anxiety due to separation from attachment figures.

Educational objective:
Separation anxiety disorder consists of excessive and distressing anxiety (≥4 weeks in children, ≥6 months in adults) due to separation from attachment figures. Children with this disorder often experience physical symptoms and nightmares.

References

- Pediatric-onset and adult-onset separation anxiety disorder across countries in the World Mental Health

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A 46-year-old woman comes to the office for follow-up after an episode of alcoholic pancreatitis. She was hospitalized 4 weeks ago for abdominal pain and concurrently underwent treatment with benzodiazepines for alcohol withdrawal. Prior to hospitalization, the patient was drinking 3 L of boxed wine daily; however, she has remained abstinent since discharge. She is interested in medication for her alcohol use disorder, but lives alone and is worried that her cravings will overwhelm her self control. A medication with which of the following mechanisms of action would be most effective in this patient?

- A. Aldehyde dehydrogenase inhibition
- B. Antagonism at postsynaptic dopamine receptors
- C. Mu-opioid receptor blockade
- D. Partial agonism at nicotinic acetylcholine receptors
- E. Serotonin reuptake inhibition

Submit

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- A. Aldehyde dehydrogenase inhibition (59%)
- ✗ B. Antagonism at postsynaptic dopamine receptors (3%)
- ✓ C. Mu-opioid receptor blockade (28%)
- D. Partial agonism at nicotinic acetylcholine receptors (5%)
- E. Serotonin reuptake inhibition (2%)

Incorrect
Correct answer
C

28%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

In addition to psychosocial interventions (eg, motivational interviewing, Alcoholics Anonymous), several medications are available to treat **alcohol use disorder**, including naltrexone and acamprosate. **Naltrexone blocks the mu-opioid receptor** and inhibits the rewarding and reinforcing effects of alcohol, helping to reduce cravings and improving motivation to quit. The long-acting **depot form** (given as monthly injections) is useful for patients at risk for nonadherence with daily administration. Acamprosate, another abstinence-promoting drug, works by modulating glutamate neurotransmission at the N-methyl-D-aspartate receptor

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Explanation

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(Choice A) The aldehyde dehydrogenase inhibitor disulfiram is considered a second-line treatment for alcohol use disorder because of poorer efficacy (effectiveness depends on supervised administration). When alcohol is ingested by a patient taking disulfiram, acetaldehyde accumulates and causes unpleasant adverse effects (eg, nausea, vomiting, flushing, sweating, headache).

(Choice B) Antagonism at postsynaptic dopamine receptors is the mechanism of action of antipsychotic medications. Antipsychotics are not effective in treating alcohol use disorder.

(Choice D) Varenicline acts as a partial neuronal nicotinic receptor agonist and prevents the nicotine stimulation of the mesolimbic dopamine system associated with nicotine addiction.

(Choice E) Serotonin reuptake inhibition is the mechanism of action of selective serotonin reuptake inhibitor antidepressants. Although they have shown some efficacy in reducing alcohol use in patients with alcohol use disorder who have comorbid depression, they are not useful for alcohol cessation in patients without comorbid depression.

Educational objective:
The opioid antagonist naltrexone is a first-line pharmacotherapy for moderate-to-severe alcohol use disorder, and works by preventing the reinforcing effects of alcohol use.

References

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A 13-year-old boy is brought to the office by his parents after being involved in a fight with another student at school. His parents say, "He has never gotten into fights before, and we are getting worried because his grades have been declining as well. He seems irritable and moody, stays in his room for hours at a time, and no longer invites friends home." When interviewed alone about the incident, the patient says, "The wall people warned me that he was trying to poison my lunch." The patient has no significant medical history; there is a family history of bipolar disorder in a paternal aunt. Temperature is 37.2 C (99 F), blood pressure is 130/80 mm Hg, pulse is 98/min, and respirations are 14/min. Physical examination shows a postural tremor on extension of the arms and a broad-based gait. Mental status examination is significant for slurred speech, sad mood, and distractibility. Laboratory studies reveal elevated serum transaminases. Which of the following is the most likely diagnosis?

- A. Acute intermittent porphyria
- B. Alcohol abuse
- C. Bipolar disorder with psychotic features
- D. Hemochromatosis
- E. Major depressive disorder with psychotic features
- F. Prodromal schizophrenia
- G. Wilson disease

Submit

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- A. Acute intermittent porphyria (5%)
- B. Alcohol abuse (12%)
- ✗ C. Bipolar disorder with psychotic features (2%)
- D. Hemochromatosis (5%)
- E. Major depressive disorder with psychotic features (1%)
- F. Prodromal schizophrenia (5%)
- ✓ G. Wilson disease (67%)

Incorrect
Correct answer
G

67%
Answered correctly

03 secs
Time Spent

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Explanation

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Wilson disease	
Pathogenesis	• Autosomal recessive mutation of *ATP7B* → hepatic copper accumulation → leak from damaged hepatocytes → deposits in tissues (eg, basal ganglia, cornea)
Clinical findings	• Hepatic (acute liver failure, chronic hepatitis, cirrhosis) • Neurologic (parkinsonism, gait disturbance, dysarthria) • Psychiatric (depression, personality changes, psychosis)
Diagnosis	• ↓ Ceruloplasmin & ↑ urinary copper excretion • Kayser-Fleischer rings on slit-lamp examination • ↑ Copper content on liver biopsy
Treatment	• Chelators (eg, D-penicillamine, trientine) • Zinc (interferes with copper absorption)

This patient's auditory hallucinations, mood and personality changes associated with neurologic features (slurred speech, tremor, gait instability), and abnormal liver function tests suggest a diagnosis of **Wilson disease**. Wilson disease is an autosomal recessive condition marked by **copper accumulation** in the liver, brain, and cornea, which most commonly manifests in childhood, adolescence, or early adulthood with hepatic involvement and/or neuropsychiatric symptoms.

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Psychiatric symptoms range from subtle personality changes to depression, mania, and/or psychosis. These symptoms may predate **hepatic or neurologic manifestations** and be mistaken for normal adolescence or primary psychiatric illness. Evaluation includes a ceruloplasmin level, 24-hour urinary copper excretion, and slit-lamp examination for copper deposition in the cornea (Kayser-Fleischer rings).

(Choice A) Acute intermittent porphyria (AIP) can present with psychiatric symptoms; however, these are episodic in nature and normally associated with abdominal pain and peripheral neuropathy. AIP commonly manifests in midlife rather than childhood.

(Choice B) Heavy alcohol use can result in elevated transaminases and psychiatric symptoms, and acute intoxication can present with slurred speech and unsteady gait. However, acute intoxication would likely present with stupor or disinhibition, alcohol on the breath, and additional findings such as abnormal vital signs (eg, hypotension, tachycardia), or other metabolic abnormalities (eg, hypoglycemia, hyperlactatemia). Tremors would be expected in alcohol withdrawal, not intoxication.

(Choices C and E) Although this patient has mood and psychotic symptoms, these primary psychiatric disorders would not explain his neurologic findings and abnormal liver function tests. Major depressive and bipolar disorders are not diagnosed when symptoms are attributable to another medical condition.

(Choice D) In hemochromatosis, there is an abnormal buildup of iron, which particularly affects the liver, heart, and pancreas. It may present with abnormal liver function tests, diabetes, arthralgia, and/or cardiomegaly. Hemochromatosis tends to present in later life (eg, age ≥ 40). Neurologic findings and psychosis are uncommon.

(Choice F) Prodromal schizophrenia often presents with personality changes and social withdrawal prior to the

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lamp examination for copper deposition in the cornea (Kayser-Fleischer rings).

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(Choice F) Prodromal schizophrenia often presents with personality changes and social withdrawal prior to the onset of overt psychosis. However, because primary psychotic disorders in children and adolescents are rare, a thorough workup of substance-induced and other etiologies is necessary. This patient's psychiatric symptoms are better explained as a manifestation of Wilson disease.

Educational objective:
Wilson disease is associated with copper accumulation in the liver, brain, and cornea. It can present in childhood or adolescence with abnormal liver function tests and/or neuropsychiatric symptoms. Psychiatric symptoms may predate other manifestations and include personality changes, depression, mania, and/or psychosis.

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A 60-year-old man is found by his daughter to be confused at home. Emergency medical services are called and he is brought to the emergency department by ambulance. The patient's daughter, who accompanies him, says that she found an empty bottle of amitriptyline next to his bed. He has not been taking any other medications. In the emergency department, the patient is delirious and says that he sees small animals running around in the corner of the room. He appears flushed. The patient has a brief seizure and becomes unconscious. Temperature is 37.2 C (99 F), blood pressure is 90/62 mm Hg, and pulse is 120/min. Both pupils are dilated and equally reactive to light, and his skin and mucous membranes are dry. Initial ECG shows QRS widening and QTc prolongation. He is transferred to the intensive care unit but dies despite resuscitation attempts. Which of the following pharmacological effects most likely contributed to the patient's death?

- A. Increased antihistamine effect
- B. Sodium channel inhibition
- C. Synaptic norepinephrine accumulation
- D. Synaptic serotonin accumulation
- E. Uncontrolled presynaptic dopamine release

Submit

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- A. Increased antihistamine effect (4%)
- ✓ B. Sodium channel inhibition (66%)
- C. Synaptic norepinephrine accumulation (11%)
- D. Synaptic serotonin accumulation (16%)
- E. Uncontrolled presynaptic dopamine release (2%)

Correct

66% Answered correctly

04 secs Time Spent

2023 Version

Explanation

Tricyclic antidepressant pharmacology	
Inhibitory effects	Consequences

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Explanation

Tricyclic antidepressant pharmacology	
Inhibitory effects	**Consequences**
Central & peripheral muscarinic acetylcholine receptors	Tachycardia, delirium, dilated pupils, flushing, decreased sweating, hyperthermia, ileus, urinary retention
Peripheral α1-adrenergic receptors	Peripheral vasodilation (orthostatic hypotension)
Cardiac fast sodium channels	Conduction defects, arrhythmias
Presynaptic (norepinephrine & serotonin) neurotransmitter reuptake	Antidepressant & anxiolytic effects, seizures, tremors
Histamine (H_1) receptors	Sedation, increased appetite

Tricyclic antidepressants (TCAs), such as amitriptyline, inhibit the reuptake of norepinephrine and serotonin and are used in the treatment of depression. They also **inhibit** fast **sodium channel conduction**, slowing down myocardial depolarization and potentially leading to **cardiac arrhythmias** in overdose. **Refractory hypotension** results from decreased cardiac contractility and direct peripheral vasodilation (from peripheral alpha-1 adrenergic receptor antagonism). Most deaths from **TCA overdose** are due to cardiac arrhythmias and refractory hypotension.

Treatment of TCA overdose involves **sodium bicarbonate** ($NaHCO_3$) therapy. $NaHCO_3$ increases serum pH, promoting TCA dissociation from sodium channels, and increases extracellular sodium concentration. These

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Treatment of TCA overdose involves **sodium bicarbonate** ($NaHCO_3$) therapy. $NaHCO_3$ increases serum pH, promoting TCA dissociation from sodium channels, and increases extracellular sodium concentration. These effects help overcome the sodium channel blockade induced by TCAs.

(Choice A) TCAs cause antihistaminic effects by antagonizing histamine (H1) receptors. This can cause increased sedation and appetite but is not implicated in death from TCAs.

(Choice C) TCAs block the amine reuptake pumps within the synaptic cleft, which normally terminate amine transmission. This permits a longer interaction between the neurotransmitter and the receptor, which is thought to account for TCA antidepressant properties. However, synaptic norepinephrine accumulation is not the mechanism by which death occurs following TCA overdose.

(Choice D) Serotonin syndrome must be considered in suspected antidepressant overdose. Patients with serotonin syndrome have hyperthermia, autonomic instability, hyperreflexia, myoclonus, and diaphoresis. Cardiac changes are not usually indicative of serotonin syndrome. Although symptoms of excess serotonin may be present after TCA overdose, most deaths are due to cardiac toxicity.

(Choice E) TCAs do not increase presynaptic release of dopamine. Amphetamines increase the release of dopamine (and norepinephrine) by vesicles in presynaptic neurons.

Educational objective:
Tricyclic antidepressant overdose can cause fatal cardiac arrhythmias and refractory hypotension due to inhibition of fast sodium channels in cardiac myocytes. Sodium bicarbonate is used to treat associated cardiac toxicity and

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myocardial depolarization and potentially leading to **cardiac arrhythmias** in overdose. **Refractory hypotension** results from decreased cardiac contractility and direct peripheral vasodilation (from peripheral alpha-1 adrenergic receptor antagonism). Most deaths from **TCA overdose** are due to cardiac arrhythmias and refractory hypotension.

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Educational objective:
Tricyclic antidepressant overdose can cause fatal cardiac arrhythmias and refractory hypotension due to inhibition of fast sodium channels in cardiac myocytes. Sodium bicarbonate is used to treat associated cardiac toxicity and works by increasing serum pH and extracellular sodium (alleviating fast sodium channel blockade).

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A 36-year-old man is brought to the hospital after being found wandering the streets barefoot and shouting to himself. Although he takes antipsychotic medication daily, his parents are having difficulty managing him at home. The patient believes he is fighting a conspiracy and that his thoughts are directly controlled by a device that was implanted in his brain during a prior hospitalization. Previous trials of haloperidol, quetiapine, and risperidone resulted in minimal improvement. He has no other medical problems. On mental status examination, the patient is alert, and restless with poor grooming, disheveled clothing, and flat affect. He refuses to answer most questions, accuses his parents of being part of the conspiracy, and mumbles nonsensical words. Which of the following medications would be most effective for this patient's illness?

- A. Aripiprazole
- B. Chlorpromazine
- C. Clonazepam
- D. Clozapine
- E. Haloperidol long-acting injectable
- F. Valproate
- G. Ziprasidone

Submit

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- ✗ A. Aripiprazole (6%)
- B. Chlorpromazine (6%)
- C. Clonazepam (4%)
- ✓ D. Clozapine (65%)
- E. Haloperidol long-acting injectable (8%)
- F. Valproate (5%)
- G. Ziprasidone (2%)

Incorrect
Correct answer
D

65%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Clozapine treatment guidelines

https://t.me/USMLEWorldStep1

Clozapine treatment guidelines	
Indications	• Treatment-resistant schizophrenia • Schizophrenia associated with suicidality
Adverse effects	• Agranulocytosis • Seizures • Myocarditis • Metabolic syndrome

This patient likely has schizophrenia, a chronic mental illness characterized by delusions, hallucinations, disorganized speech and behavior, and negative symptoms. Antipsychotic medication is the treatment of choice. This patient is considered treatment-resistant as he has had a poor response to at least 2 antipsychotics and continues to experience multiple delusions and disorganized speech and behavior. The second-generation antipsychotic **clozapine** is the only medication that has consistently shown **superior efficacy** in **treatment-resistant schizophrenia**. Clozapine has an affinity for multiple dopamine and serotonin receptors, but the precise pharmacological mechanism responsible for its superior efficacy is unknown.

Treatment with clozapine involves mandatory monitoring of the absolute neutrophil count due to the risk of neutropenia and life-threatening **agranulocytosis**. Although clozapine is associated with neutropenia, weight gain, and metabolic effects, the potential benefit of improving symptoms in treatment-resistant schizophrenia often outweighs these risks.

(Choices A and G) Aripiprazole and ziprasidone are second-generation antipsychotics used in schizophrenia. However this patient has already failed 2 trials with second-generation antipsychotics (risperidone and quetiapine). Due to its superior efficacy in treatment-resistant schizophrenia, clozapine would be the preferred agent.

(Choice B) Chlorpromazine is a low-potency, first-generation antipsychotic that is unlikely to be effective in treatment-resistant schizophrenia

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(Choice B) Chlorpromazine is a low-potency, first-generation antipsychotic that is unlikely to be effective in treatment-resistant schizophrenia.

(Choice C) Clonazepam is a benzodiazepine that can be used adjunctively to target agitation in individuals with psychosis, but it does not specifically treat psychotic symptoms.

(Choice E) Haloperidol long-acting injectable would be a good strategy for a patient who is nonadherent and has a history of responding well to oral haloperidol. However, this patient is adherent and has responded poorly to haloperidol.

(Choice F) Valproate is an anticonvulsant mood stabilizer used in the treatment of bipolar disorder.

Educational objective:

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(Choice F) Valproate is an anticonvulsant mood stabilizer used in the treatment of bipolar disorder.

Educational objective:
The antipsychotic clozapine is the drug of choice for treatment-resistant schizophrenia. Treatment requires monitoring of the absolute neutrophil count due to the risks of neutropenia and agranulocytosis.

References

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A 71-year-old woman is brought to the emergency department with suicidal ideation. Medical history includes major depressive disorder as well as chronic knee and back pain due to injuries sustained in a motor vehicle collision. Developmental history is significant for physical abuse as a child. Family history is significant for bipolar disorder and completed suicide in her father. The patient reports increasing depression since losing her job a year ago and separating from her husband of 40 years 6 months ago. She has a history of 2 prior hospitalizations for depression and a previous suicide attempt. The patient is recovering from alcohol use disorder and attends weekly Alcoholics Anonymous meetings at her church. Although she lives alone, she is close to her daughter, who lives nearby. The patient reports that she owns a firearm that is kept in a locked cabinet. Which of the following is the strongest risk factor for completed suicide in this patient?

- A. Access to firearms
- B. Age >70
- C. Female sex
- D. History of childhood trauma
- E. History of completed suicide in a parent
- F. History of suicide attempt
- G. Major depressive disorder
- H. Recent marital separation

Submit

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- A. Access to firearms (43%)
- ✗ B. Age >70 (1%)
- C. Female sex (0%)
- D. History of childhood trauma (0%)
- E. History of completed suicide in a parent (1%)
- ✓ F. History of suicide attempt (49%)
- G. Major depressive disorder (1%)
- H. Recent marital separation (0%)

Incorrect
Correct answer
F

49%
Answered correctly

08 secs
Time Spent

2023
Version

Explanation

https://t.me/USMLEWorldStep1

Suicide risk & protective factors	
Risk factors	• Psychiatric disorders, prior suicide attempts • Hopelessness • Never married, divorced, separated • Living alone • Unemployed or unskilled • Physical illness • Family history of suicide, family discord • Access to firearms • Substance abuse, impulsivity
Protective factors	• Social support/family connectedness • Pregnancy • Parenthood • Religion & participation in religious activities

A comprehensive suicide risk assessment involves considering both risk and protective factors. This patient has multiple risk factors for suicide, including her marital status, unemployment, psychiatric illness, **past suicide attempt**, family history of suicide, chronic pain, childhood abuse, and access to a firearm. Of these risk factors, a history of attempted suicide is the **strongest single factor** predictive of **completed suicide**.

Patients with previous suicide attempts are 5-6 times more likely to make another attempt. Studies suggest that 1 out of 100 people who survive a suicide attempt will complete suicide within a year. This is 100 times the risk seen in the general population. Protective factors in this patient include her status as a parent with a connection to her daughter, participation in her church, and sobriety (as alcohol and other drugs have disinhibiting effects that increase the risk of acting on suicidal impulses).

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(Choice A) Studies suggest that the risk of completed suicide in those who have access to firearms is 3 times greater than in those who do not.

(Choices B, C, and H) Age, male sex, and being separated/divorced are risk factors for suicide. Elderly (age >75) white men have the highest suicide rate. Although women attempt suicide nearly twice as often, men use more lethal methods (eg, firearms) that result in completed suicide 3 times more often. Suicide risk is highest in individuals who have never married, followed by those who are widowed, separated, or divorced.

(Choices D and E) A history of adverse childhood experiences (eg, abuse, parental discord, parental substance abuse) and a family history of suicide increase the risk of suicide, most likely due to both environmental and genetic factors.

(Choice G) Psychiatric illness, especially when associated with hopelessness, is a strong predictive factor for suicide. Of patients who die by suicide, 90% have a diagnosable psychiatric disorder at the time of death. Increased severity of illness and recent discharge from psychiatric inpatient care are additional risk factors.

Educational objective:
Suicide risk assessment includes consideration of both risk and protective factors. A history of a previous suicide

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multiple risk factors for suicide, including her marital status, unemployment, psychiatric illness, **past suicide attempt**, family history of suicide, chronic pain, childhood abuse, and access to a firearm. Of these risk factors, a history of attempted suicide is the **strongest single factor** predictive of **completed suicide**.

Patients with previous suicide attempts are 5-6 times more likely to make another attempt. Studies suggest that 1 out of 100 people who survive a suicide attempt will complete suicide within a year. This is 100 times the risk seen in the general population. Protective factors in this patient include her status as a parent with a connection to her daughter, participation in her church, and sobriety (as alcohol and other drugs have disinhibiting effects that increase the risk of acting on suicidal impulses).

(Choice A) Studies suggest that the risk of completed suicide in those who have access to firearms is 3 times greater than in those who do not.

(Choices B, C, and H) Age, male sex, and being separated/divorced are risk factors for suicide. Elderly (age >75) white men have the highest suicide rate. Although women attempt suicide nearly twice as often, men use more lethal methods (eg, firearms) that result in completed suicide 3 times more often. Suicide risk is highest in individuals who have never married, followed by those who are widowed, separated, or divorced.

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Educational objective:
Suicide risk assessment includes consideration of both risk and protective factors. A history of a previous suicide attempt is the strongest single risk factor for further attempts and completed suicide.

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A 32-year-old man comes to the office due to anxiety that has intensified since he was promoted to a managerial position. Whereas he previously worked alone, his new position requires him to interact with a team of five employees and handle customer service complaints. The patient says he is anxious throughout the day and fears that he will say something embarrassing or that his coworkers and customers will notice his anxiety and think he is incompetent. He says he was very quiet and shy growing up and would always get anxious when meeting new people. He has a few friends with whom he socializes, but he typically has three or four alcoholic drinks before going out with them to feel more relaxed. The patient does not feel depressed, and his sleep and appetite are normal. A medication with which of the following mechanisms of action would be most appropriate for this patient?

- A. Beta adrenergic blockade
- B. Dopamine and serotonin receptor antagonism
- C. $GABA_A$ receptor agonism
- D. Histamine receptor antagonism
- E. Monoamine oxidase inhibition
- F. Serotonin reuptake inhibition

Submit

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- A. Beta adrenergic blockade (13%)
- ✗ B. Dopamine and serotonin receptor antagonism (1%)
- C. $GABA_A$ receptor agonism (7%)
- D. Histamine receptor antagonism (0%)
- E. Monoamine oxidase inhibition (0%)
- ✓ F. Serotonin reuptake inhibition (75%)

Incorrect
Correct answer
F

75%
Answered correctly

06 secs
Time Spent

2023
Version

Explanation

Social anxiety disorder (social phobia)	
	Marked anxiety about >1 social situations for >6 months

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Social anxiety disorder (social phobia)	
Diagnosis	• Marked anxiety about ≥1 social situations for ≥6 months • Fear of scrutiny by others, humiliation, embarrassment • Social situations avoided or endured with intense distress • Marked impairment (social, academic, occupational) • Subtype specifier: performance only
Treatment	• SSRI/SNRI • Cognitive-behavioral therapy • Beta blocker or benzodiazepine for performance-only subtype
SNRI = serotonin-norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor.	

This patient's marked anxiety in social situations is consistent with **social anxiety disorder** (SAD). His fears of saying something embarrassing and negative evaluation by others are characteristic of the disorder. SAD is a common anxiety disorder with typical onset in childhood or adolescence. If untreated, the disorder can cause major impairment in social and occupational functioning and is often complicated by depression and self-medication with alcohol.

Drugs that inhibit the reuptake of serotonin are first-line medications for social anxiety disorder. Patients are commonly started on a **selective serotonin reuptake inhibitor** (SSRI) although there is also good evidence for the efficacy of **serotonin-norepinephrine reuptake inhibitors** (SNRIs). These medications work by blocking the serotonin transporter, causing an increase in the availability of serotonin in the synaptic cleft.

(Choice A) Beta blockers have been used to treat performance-only social anxiety disorder. They are taken on an as-needed basis and are most useful for patients with prominent physiological symptoms such as tachycardia or tremor. A beta blocker would not be appropriate for this patient who is generally socially anxious (ie, anxiety not limited to performance situations) and who experiences impairing anxiety on a daily basis.

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(Choice B) Dopamine and serotonin receptor antagonism are the mechanisms of action of second-generation antipsychotics. These drugs are not indicated for SAD.

(Choice C) $GABA_A$ receptor agonism is the mechanism of action of benzodiazepines. Benzodiazepines are effective in SAD but are generally used as second-line agents due to their potential for tolerance, abuse, and dependence. They should be avoided in this patient who has a history of self-medication with alcohol.

(Choice D) Histamine receptor antagonism is the mechanism of action of antihistamines (eg, diphenhydramine). Although they have sedative effects, they are not effective in treating anxiety.

(Choice E) Monoamine oxidase inhibitors are effective for SAD but are not used as a first-line treatment due to their side effect profile and dietary restrictions.

Educational objective:

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Educational objective:
Social anxiety disorder is characterized by anxiety and fear of scrutiny in social situations and can result in marked social-occupational impairment. Preferred pharmacotherapy is medication that inhibits serotonin reuptake (eg, SSRIs or SNRIs).

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A 40-year-old woman is brought to the emergency department by her roommate due to significant left leg weakness. The symptom began 3 days ago after her father had a heart attack. There is no personal or family history of neurological disease; surgical history includes liposuction of the thighs and varicose vein removal. She does not use tobacco, alcohol, or illicit drugs. Temperature is 36.7 C (98.1 F), blood pressure is 123/81 mm Hg, pulse is 62/min, and respirations are 14/min. Physical examination reveals symmetric 2+ deep tendon reflexes as well as normal muscle bulk and tone bilaterally in the upper and lower extremities. Laboratory testing and neurologic imaging reveal no abnormalities. Which of the following is the most likely diagnosis?

- A. Body dysmorphic disorder
- B. Conversion disorder
- C. Factitious disorder
- D. Illness anxiety disorder
- E. Malingering
- F. Somatic symptom disorder

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- A. Body dysmorphic disorder (0%)
- ✓ B. Conversion disorder (66%)
- C. Factitious disorder (3%)
- D. Illness anxiety disorder (4%)
- E. Malingering (1%)
- F. Somatic symptom disorder (22%)

Correct

66% Answered correctly

56 secs Time Spent

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Explanation

Key features of somatic symptom & related disorders	
Somatic	≥1 unexplained symptoms; excessive thoughts, anxiety & behaviors in

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Key features of somatic symptom & related disorders	
Somatic symptom disorder	≥1 unexplained symptoms; excessive thoughts, anxiety & behaviors in response to symptoms
Illness anxiety disorder	Minimal to no symptoms; preoccupation with idea of having a serious illness
Conversion disorder (functional neurologic symptom disorder)	Neurologic symptom(s) incompatible with anatomy or pathophysiology
Factitious disorder	Falsification of symptoms/inducing injury in the absence of obvious external rewards
Malingering	Falsification of illness for obvious external rewards

This patient's acute onset of muscular weakness following a stressful incident, normal neurological examination, and negative workup are suggestive of **conversion disorder** (functional neurologic symptom disorder). Conversion disorder is characterized by symptoms or **deficits of voluntary motor** and/or **sensory function** that are **incompatible** with any **recognized neurological condition** and cannot be explained by another medical or mental disorder. Common symptoms of conversion disorder may include weakness, paralysis, gait disturbance, blindness, diplopia, aphonia, anesthesia, or nonepileptic seizures (also called psychogenic seizures).

The phenomenon of la belle indifférence (ie, incongruous lack of concern about symptoms) has been associated with conversion disorder but is not pathognomonic, occurs at equal frequency in true neurological disorders, and should not be used to make the diagnosis. In fact, patients with conversion disorder may be very distressed by their symptoms.

(Choice A) Body dysmorphic disorder involves an excessive preoccupation with perceived defects in physical

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(Choice A) Body dysmorphic disorder involves an excessive preoccupation with perceived defects in physical appearance (eg, nose shape) as opposed to a neurologic deficit (eg, leg weakness).

(Choice C) In factitious disorder, patients deliberately falsify symptoms due to their desire to assume the sick role. There is no evidence that this patient is intentionally falsifying her symptoms, and given her recent stress (eg, her father's heart attack), conversion disorder is more likely.

(Choice D) Illness anxiety disorder is characterized by excessive fears of having a serious physical disease. The fear is usually due to misinterpretation of bodily symptoms or normal functions (eg, a man with gas pain becoming preoccupied with having colon cancer).

(Choice E) Malingering is the purposeful falsification of symptoms for obvious external benefit (eg, a patient feigning hemiparesis to receive disability benefits).

(Choice F) Somatic symptom disorder is characterized by excessive and persistent health anxiety and preoccupation with multiple somatic symptoms; it does not present with a clearly incompatible neurological examination. This patient does not express any concern about her impairment and seeks care only when brought

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blindness, diplopia, aphonia, anesthesia, or nonepileptic seizures (also called psychogenic seizures).

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(Choice F) Somatic symptom disorder is characterized by excessive and persistent health anxiety and preoccupation with multiple somatic symptoms; it does not present with a clearly incompatible neurological examination. This patient does not express any concern about her impairment and seeks care only when brought in by her roommate, effectively ruling out somatic symptom disorder.

Educational objective:
Conversion disorder is characterized by neurologic symptoms and examination findings that are incompatible with a known neurological disease. Patients do not consciously produce the symptoms like in factitious disorder or malingering, and the condition may cause significant distress/impairment.

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A 45-year-old woman brings her stepson to the office for a well-child visit. She never wanted children due to her unhappy childhood and wishes her marriage did not include being a stepmother to her husband's 5-year-old son. In the waiting room, the woman seems excessively concerned when the boy accidentally trips and is clearly uninjured. During the visit, she tells the physician that she adores the child and describes her elaborate preparations for his birthday party. Which of the following defense mechanisms best explains this woman's behavior?

- A. Displacement
- B. Projection
- C. Rationalization
- D. Reaction formation
- E. Splitting
- F. Suppression

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- A. Displacement (3%)
- B. Projection (5%)
- ✗ C. Rationalization (2%)
- ✓ D. Reaction formation (77%)
- E. Splitting (6%)
- F. Suppression (5%)

Incorrect
Correct answer
D

77%
Answered correctly

08 secs
Time Spent

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Explanation

Key defense mechanisms	
	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist

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Reaction formation is a defense mechanism in which an individual **transforms unacceptable feelings** or impulses into their **extreme opposites**. This woman does not want to be a stepmother, and her resentment toward the child is masked with declarations of love. Her negative feelings toward the child are transformed into oversolicitous behavior in response to his tripping and excessive preparations for his birthday party.

(Choice A) Displacement is the inappropriate transfer of feelings or impulses toward a less threatening object (eg, if this woman yelled at her dog instead of the child).

(Choice B) Projection involves attributing unacceptable impulses or behavior to another person or situation (eg, if this woman accused her husband of disliking the child).

(Choice C) In rationalization, an individual makes excuses for unacceptable feelings or behavior (eg, if this woman explained that she is much too old to be caring for a young child).

(Choice E) Splitting is an immature defense mechanism in which an individual is unable to integrate mixed feelings (eg, if this woman alternately felt the boy was "all bad" and "all good"). It is commonly seen in borderline personality disorder.

(Choice F) Suppression is the voluntary withholding of unpleasant thoughts or feelings from one's mind in order to cope with reality (eg, if this woman acknowledged her resentment toward the child but chose to put it aside for the sake of her marriage).

Educational objective:
Reaction formation is a defense mechanism that involves replacing unacceptable feelings and impulses with their extreme opposites.

References

- Change in coping and defense mechanisms across adulthood: longitudinal findings in a European-American sample.

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A 31-year-old woman comes to the office for a yearly checkup. The patient has no medical conditions but expresses dissatisfaction with her appearance and wishes she could lose weight more easily. She reports occasional constipation and fatigue. The patient exercises daily and drinks 1 or 2 glasses of wine 2-3 times a week when socializing with friends. Weight is 58.1 kg (128 lb) and height is 157.5 cm (5 ft 2 in). BMI is 23.4 kg/m^2. Routine laboratory evaluation shows a potassium level of 3.1 mEq/L. Physical examination is most likely to show which of the following abnormalities?

- A. Bradycardia
- B. Diaphoresis
- C. Goiter
- D. Hypertension
- E. Lanugo
- F. Malar rash
- G. Parotid gland enlargement

Submit

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A 31-year-old woman comes to the office for a yearly checkup. The patient has no medical conditions but expresses dissatisfaction with her appearance and wishes she could lose weight more easily. She reports occasional constipation and fatigue. The patient exercises daily and drinks 1 or 2 glasses of wine 2-3 times a week when socializing with friends. Weight is 58.1 kg (128 lb) and height is 157.5 cm (5 ft 2 in). BMI is 23.4 kg/m^2. Routine laboratory evaluation shows a potassium level of 3.1 mEq/L. Physical examination is most likely to show which of the following abnormalities?

- A. Bradycardia (17%)
- ✗ B. Diaphoresis (1%)
- C. Goiter (8%)
- D. Hypertension (6%)
- E. Lanugo (4%)
- F. Malar rash (0%)
- ✓ G. Parotid gland enlargement (61%)

Incorrect
Correct answer
G

61%
Answered correctly

06 secs
Time Spent

2023
Version

Explanation

Bulimia nervosa	
	• Recurrent episodes of binge eating & inappropriate compensatory behavior (eg,

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Bulimia nervosa	
Clinical features	• Recurrent episodes of binge eating & inappropriate compensatory behavior (eg, vomiting, laxatives, excessive exercise) • Excessive preoccupation with body weight & shape • Body weight within or above normal range • Symptoms: abdominal pain, bloating, constipation, lethargy, irregular menses
Physical examination	• Hypotension, tachycardia • Dental enamel erosion, caries • Dorsal hand calluses • Parotid gland swelling
Laboratory findings	• Hypokalemia • Metabolic alkalosis

Hypokalemia in an otherwise healthy young adult with a normal BMI and preoccupation with body shape and weight is concerning for **self-induced vomiting** associated with **bulimia nervosa** (BN). BN is characterized by repeated episodes of binge eating followed by **compensatory behaviors** (eg, vomiting, laxative use, fasting, excessive exercise) to prevent weight gain. Because patients may not be forthcoming about their eating behavior due to embarrassment, physical examination and laboratory assessment can assist in making the diagnosis. Painless bilateral **parotid gland enlargement** due to repetitive vomiting is a common finding.

Other signs of BN include tachycardia, hypotension, dry skin, calluses or scarring on the dorsum of the hand (Russell sign), and erosion of dental enamel. Common electrolyte abnormalities in BN include hypokalemia and metabolic alkalosis.

(Choices A, B, and D) BN is more commonly associated with tachycardia, dry skin, and hypotension rather than bradycardia (typically seen in anorexia nervosa), diaphoresis, and hypertension.

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(Choices A, B, and D) BN is more commonly associated with tachycardia, dry skin, and hypotension rather than bradycardia (typically seen in anorexia nervosa), diaphoresis, and hypertension.

(Choice C) Goiter can be asymptomatic or associated with symptoms of hypothyroidism or hyperthyroidism. Hypothyroidism can present with fatigue and constipation but would not explain this patient's hypokalemia.

(Choice E) Lanugo hair growth (soft, downy hair typical of newborns) more commonly occurs in anorexia nervosa due to malnutrition.

(Choice F) A malar (butterfly) rash is a characteristic finding in systemic lupus erythematosus, a condition often associated with fatigue. However, other typical findings, including fever, weight loss, and myalgias, are not present in this patient.

Educational objective:
Hypokalemia in an otherwise healthy young adult with a normal BMI and preoccupation with body size is concerning for self-induced vomiting associated with bulimia nervosa. Common physical examination findings in bulimia nervosa include tachycardia, hypotension, painless bilateral parotid gland swelling, calluses or scarring on the dorsum of the hand, and erosion of dental enamel.

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A 22-year-old woman is hospitalized due to suicidal ideation. The patient describes feelings of intense sadness, emptiness, and despair for the past week following the breakup of her month-long romantic relationship. For the past week, she has had difficulty falling and staying asleep but has had no change in appetite, energy level, or concentration. She feels betrayed by her boyfriend and is furious at her parents for turning against her. Since the breakup, the patient has been going to bars, engaging in unsafe sex, and drinking excessively. She describes having intense mood swings since adolescence and has a history of 2 suicide attempts involving an overdose of sleeping pills. Which of the following is the most likely diagnosis?

- A. Bipolar II disorder
- B. Borderline personality disorder
- C. Dependent personality disorder
- D. Histrionic personality disorder
- E. Major depressive disorder
- F. Paranoid personality disorder
- G. Substance-induced mood disorder

Submit

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- A. Bipolar II disorder (18%)
- ✓ B. Borderline personality disorder (63%)
- ✗ C. Dependent personality disorder (4%)
- D. Histrionic personality disorder (7%)
- E. Major depressive disorder (4%)
- F. Paranoid personality disorder (0%)
- G. Substance-induced mood disorder (1%)

Incorrect
Correct answer
B

63%
Answered correctly

06 secs
Time Spent

2023
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Explanation

Borderline personality disorder	

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Borderline personality disorder	
Clinical features	• Pervasive pattern of behavior beginning at early adulthood; ≥5 of the following: ◦ Unstable self-image ◦ Feelings of emptiness ◦ Unstable relationships ◦ Abandonment fears ◦ Mood instability (intense reactivity lasting hours to days) ◦ Inappropriate anger ◦ Transient paranoia or dissociation ◦ Impulsivity (eg, substance abuse, binge eating) ◦ Recurrent suicidality, self-injury (eg, cutting)
Differential diagnosis	• Bipolar II disorder (distinct hypomanic & major depressive episodes) • Dependent personality disorder (submissive in response to interpersonal stress) • Histrionic personality disorder (no self-destructive behavior or intense anger)

This patient's depression, suicidal ideation, and impulsivity in the setting of feeling rejected are characteristic of **borderline personality disorder** (BPD). Individuals with this disorder exhibit a persistent pattern of **unstable** and **intense relationships** beginning in adolescence or early adulthood. They experience marked **mood reactivity** to interpersonal stresses and frequently alternate between extremes of idealizing and devaluing others (defense mechanism of splitting). Difficulty controlling anger, **impulsivity** (eg, substance use, unsafe sex), recurrent suicidality, and self-mutilating behavior (eg, cutting, burning) are common. Individuals with BPD frequently seek clinical attention due to suicidal behavior or threats during an interpersonal crisis and comprise approximately 20% of psychiatric inpatients.

(Choice A) Although bipolar II disorder and BPD can have similar clinical features, this patient has insufficient symptom quantity and duration to diagnose discrete episodes of hypomania and major depression required for the

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This patient's depression, suicidal ideation, and impulsivity in the setting of feeling rejected are characteristic of **borderline personality disorder** (BPD). Individuals with this disorder exhibit a persistent pattern of **unstable** and **intense relationships** beginning in adolescence or early adulthood. They experience marked **mood reactivity** to interpersonal stresses and frequently alternate between extremes of idealizing and devaluing others (defense mechanism of splitting). Difficulty controlling anger, **impulsivity** (eg, substance use, unsafe sex), recurrent suicidality, and self-mutilating behavior (eg, cutting, burning) are common. Individuals with BPD frequently seek clinical attention due to suicidal behavior or threats during an interpersonal crisis and comprise approximately 20% of psychiatric inpatients.

(Choice A) Although bipolar II disorder and BPD can have similar clinical features, this patient has insufficient symptom quantity and duration to diagnose discrete episodes of hypomania and major depression required for the diagnosis of bipolar II disorder. BPD is characterized by transient mood shifts and impulsive behaviors that occur in response to environmental triggers (eg, relationship breakup).

(Choice C) Individuals with dependent personality disorder fear abandonment but respond to relationship strain by trying to appease others, versus being impulsive and having uncontrolled anger as seen in BPD.

(Choice D) Both borderline and histrionic personality disorders are characterized by attention-seeking behavior, but this patient's excessive anger and self-destructive behavior are more characteristic of BPD.

(Choice E) This patient has insufficient symptom quantity and duration for a diagnosis of major depressive disorder (MDD). In MDD, ≥5 of the following symptoms are present for ≥2 weeks: depressed mood, sleep disturbances, anhedonia, guilt, decreased energy, concentration difficulty, appetite changes, psychomotor retardation or agitation, and suicidality.

(Choice F) Patients with BPD may experience transient, stress-related paranoid ideation but do not exhibit the pervasive pattern of distrust and suspiciousness characteristic of paranoid personality disorder.

(Choice G) This patient's alcohol misuse is a consequence, not the cause, of her behavioral disturbance.

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mechanism of splitting). Difficulty controlling anger, **impulsivity** (eg, substance use, unsafe sex), recurrent suicidality, and self-mutilating behavior (eg, cutting, burning) are common. Individuals with BPD frequently seek clinical attention due to suicidal behavior or threats during an interpersonal crisis and comprise approximately 20% of psychiatric inpatients.

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(Choice G) This patient's alcohol misuse is a consequence, not the cause, of her behavioral disturbance.

Educational objective:
Borderline personality disorder is characterized by a persistent pattern of unstable relationships, mood lability, and impulsivity. Individuals with this disorder may exhibit suicidal ideation or behavior in the context of an interpersonal crisis in which they feel rejected or abandoned.

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A 14-year-old boy is brought to the office by his parents, who are worried about his reaction to their recent decision to divorce. Despite their efforts to be supportive and engage him, he has not expressed any feelings directly about the divorce. When the patient is evaluated alone, he shares that he feels his parents are angry with him, although he cannot think of any instances when they expressed any anger toward him. On examination, the patient appears sullen and reports his mood is "fine." This patient is most likely using which of the following defense mechanisms?

- A. Acting out
- B. Displacement
- C. Identification
- D. Projection
- E. Reaction formation
- F. Regression

Submit

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- A. Acting out (3%)
- ✗ B. Displacement (11%)
- C. Identification (6%)
- ✓ D. Projection (49%)
- E. Reaction formation (19%)
- F. Regression (9%)

Incorrect
Correct answer
D

49%
Answered correctly

02 mins, 25 secs
Time Spent

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Explanation

Key defense mechanisms	
	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist • Displacement: Transferring feelings to less threatening object/person

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Key defense mechanisms	
Immature	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist • Displacement: Transferring feelings to less threatening object/person • Intellectualization: Focusing on nonemotional aspects to avoid distressing feelings • Passive aggression: Avoiding conflict by expressing hostility covertly • Projection: Attributing one's own feelings to others • Rationalization: Justifying behavior to avoid difficult truths • Reaction formation: Transforming unacceptable feelings/impulses into the opposite • Regression: Reverting to earlier developmental stage • Splitting: Experiencing a person/situation as either all positive or all negative
Mature	• Sublimation: Channeling impulses into socially acceptable behaviors • Suppression: Putting unwanted feelings aside to cope with reality

Projection is an immature defense mechanism that involves **misattributing** undesired **thoughts or feelings to another** person who does not actually have them to avoid acknowledgement in oneself. This patient is likely angry with his parents about the divorce, and, due to his inability to acknowledge these feelings, he projects them onto his parents. As a result, he perceives that his parents are angry with him, even though there is little evidence that they feel this way. Projection commonly occurs in patients who lack insight into their own motivations and feelings.

(Choice A) Acting out refers to expressing unwanted thoughts or impulses through actions (eg, if the boy expressed his anger by destroying his parents' wedding photographs).

(Choice B) Displacement involves redirecting unacceptable thoughts, feelings, and impulses intended for one person to a more neutral person or object (eg, if this patient redirected his anger at his parents toward a sibling).

(Choice C) Identification refers to modeling one's behavior after someone who is perceived to be more powerful or

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Mature	• Suppression: Putting unwanted feelings aside to cope with reality

Projection is an immature defense mechanism that involves **misattributing** undesired **thoughts or feelings to another** person who does not actually have them to avoid acknowledgement in oneself. This patient is likely angry with his parents about the divorce, and, due to his inability to acknowledge these feelings, he projects them onto his parents. As a result, he perceives that his parents are angry with him, even though there is little evidence that they feel this way. Projection commonly occurs in patients who lack insight into their own motivations and feelings.

(Choice A) Acting out refers to expressing unwanted thoughts or impulses through actions (eg, if the boy expressed his anger by destroying his parents' wedding photographs).

(Choice B) Displacement involves redirecting unacceptable thoughts, feelings, and impulses intended for one person to a more neutral person or object (eg, if this patient redirected his anger at his parents toward a sibling).

(Choice C) Identification refers to modeling one's behavior after someone who is perceived to be more powerful or prestigious. A classic example is the child of an abusive father who becomes a child abuser himself.

(Choice E) Reaction formation is the transformation of an unacceptable feeling to its opposite (eg, if instead of expressing anger, this patient behaved in an overly affectionate way toward his parents and enthusiastically supported their decision to divorce).

(Choice F) Regression refers to reverting to a less mature way of coping with difficulties (eg, if this patient began sleeping in his parents' room due to anxiety about being alone, which is more characteristic of an earlier developmental stage).

Educational objective:
Projection is an immature defense mechanism involving the misattribution of one's unacceptable feelings or thoughts to another person who does not actually have them.

References

- Understanding defense mechanisms

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A 35-year-old woman comes to the office for evaluation of anxiety. The patient works as a mechanical engineer and recently declined a promotion to be a project manager. Although her salary would have increased significantly, she felt that overseeing other employees and leading team meetings would be too stressful. She says, "If something were to go wrong, everyone would blame me. I don't even know why they offered me this position." The patient enjoys her job but tends to eat lunch by herself because she feels that her coworkers do not like her appearance or sense of humor. She has never had a long-term romantic partner but fantasizes about getting married someday. The patient lives alone, rarely socializes with friends, and is close with her mother, whom she describes as "the person I can always rely on no matter what." Which of the following is the most likely diagnosis?

- A. Acute stress disorder
- B. Adjustment disorder with anxiety
- C. Antisocial personality disorder
- D. Avoidant personality disorder
- E. Generalized anxiety disorder
- F. Paranoid personality disorder
- G. Schizoid personality disorder

Submit

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A 35-year-old woman comes to the office for evaluation of anxiety. The patient works as a mechanical engineer and recently declined a promotion to be a project manager. Although her salary would have increased significantly, she felt that overseeing other employees and leading team meetings would be too stressful. She says, "If something were to go wrong, everyone would blame me. I don't even know why they offered me this position." The patient enjoys her job but tends to eat lunch by herself because she feels that her coworkers do not like her appearance or sense of humor. She has never had a long-term romantic partner but fantasizes about getting married someday. The patient lives alone, rarely socializes with friends, and is close with her mother, whom she describes as "the person I can always rely on no matter what." Which of the following is the most likely diagnosis?

- A. Acute stress disorder (0%)
- ✕ B. Adjustment disorder with anxiety (1%)
- C. Antisocial personality disorder (3%)
- ✓ D. Avoidant personality disorder (82%)
- E. Generalized anxiety disorder (5%)
- F. Paranoid personality disorder (2%)
- G. Schizoid personality disorder (4%)

Incorrect
Correct answer
D

82%
Answered correctly

04 secs
Time Spent

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Explanation

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DSM-5 personality disorders	
Cluster A Odd/eccentric	• **Paranoid:** suspicious, distrustful, hypervigilant • **Schizoid:** prefers to be a loner, detached, unemotional • **Schizotypal:** unusual thoughts, perceptions & behavior
Cluster B Dramatic/erratic	• **Antisocial:** disregard & violation of the rights of others • **Borderline:** chaotic relationships, abandonment fears, labile mood, impulsivity, inner emptiness, self-harm • **Histrionic:** superficial, theatrical, attention-seeking • **Narcissistic:** grandiosity, lack of empathy
Cluster C Anxious/fearful	• **Avoidant:** avoidance due to fears of criticism & rejection • **Dependent:** submissive, clingy, needs to be taken care of • **Obsessive-compulsive:** rigid, controlling, perfectionistic

This patient's pattern of avoiding social interactions and hypersensitivity to criticism is characteristic of **avoidant personality disorder**. Patients with this disorder typically have very limited social relationships due to the **fear of being judged**, embarrassed, or rejected. They desire social acceptance and may fantasize about having relationships, as in this patient; however, they struggle with **feelings of inadequacy** and pursue relationships only if certain of absolute acceptance by others. Occupational dysfunction due to difficulties interacting with coworkers or turning down promotions due to fear of criticism is common.

(Choice A) Acute stress disorder involves exposure to a life-threatening event with resulting flashbacks, intrusive memories, avoidance, negative mood, hyperarousal, and dissociation from reality.

(Choice B) In adjustment disorder with anxiety, a disproportionate level of worry develops within 3 months of onset of an identifiable stressor. This patient's chronic anxiety symptoms appear to be related to a longstanding fear of rejection in social situations and low self-esteem, which is more consistent with avoidant personality

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(Choice C) Antisocial personality disorder is marked by persistent disregard for and violation of the rights of others. Individuals with this disorder are often risk-takers who exhibit criminal behavior.

(Choice E) Generalized anxiety disorder is characterized by excessive worry about multiple issues and is associated with irritability, restlessness, muscle tension, fatigue, sleep disturbance, and difficulty concentrating. This patient's anxiety is more consistent with avoidant personality disorder because it revolves around a fear of judgment by others and feelings of inadequacy, resulting in a pattern of social avoidance.

(Choice F) Paranoid personality disorder involves a pattern of distrust and suspiciousness of others' motives. Patients with this disorder also avoid relationships and socialization, but do so because they are concerned about personal information being used to exploit them.

(Choice G) Individuals with schizoid personality disorder are also socially avoidant, but they tend to be content with their social isolation. Patients with this disorder are emotionally detached, have a limited range of affect, do not desire social acceptance, and prefer to be alone.

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Educational objective:
Avoidant personality disorder is a maladaptive pattern of behavior characterized by social inhibition, feelings of inadequacy, and fear of embarrassment and rejection.

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A 24-year-old man is found unconscious in the basement of his house. His mother calls emergency responders and informs them that the patient has a history of substance abuse and was recently hospitalized for major depressive disorder. In the emergency department, the patient is found to be cyanotic and unresponsive to painful stimuli. Temperature is 36.7 C (98.1 F), blood pressure is 101/62 mm Hg, pulse is 61/min, and respirations are 4/min. His pupils are constricted and minimally responsive to light. Resuscitation efforts are initiated. The patient receives intravenous medication and regains consciousness 2 minutes later. The drug most likely used to treat this patient has the greatest affinity for which of the following receptors?

- A. 5-HT
- B. Delta
- C. GABA A
- D. GABA B
- E. Kappa
- F. Mu
- G. NMDA

Submit

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- A. 5-HT (2%)
- ✗ B. Delta (0%)
- C. GABA A (4%)
- D. GABA B (0%)
- E. Kappa (1%)
- ✓ F. Mu (86%)
- G. NMDA (2%)

Incorrect
Correct answer
F

86%
Answered correctly

05 secs
Time Spent

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Explanation

This patient's history of substance abuse, **miosis**, **profound sedation**, and **respiratory depression** with rapid reversal of signs/symptoms with antidotal therapy is consistent with an **opioid overdose**. Several opioid receptor

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This patient's history of substance abuse, **miosis**, **profound sedation**, and **respiratory depression** with rapid reversal of signs/symptoms with antidotal therapy is consistent with an **opioid overdose**. Several opioid receptor subtypes, including mu, delta, and kappa, have been identified. Available opioid medications (eg, morphine, hydromorphone) produce therapeutic analgesic effects by binding to these receptors and modulating pain perception.

Naloxone is a pure **opioid receptor antagonist** devoid of any agonist properties. Although it antagonizes opioid effects at all receptor types, it has the **greatest affinity for mu receptors** (responsible for opioid-induced cardiorespiratory depression). Naloxone competes with opioid medications, displacing them from opioid receptors; it is therefore an ideal agent for **reversing opioid intoxication/overdose**. Reversal effects can occur within minutes, and the duration is dose dependent (usually 1-4 hours). Naloxone must be given parenterally because it is metabolically inactivated by the liver when administered orally.

(Choice A) Medications with an affinity for 5-HT (serotonin) receptors do not have a role in the treatment of opioid overdose. Cyproheptadine, a 5-HT1A and 5-HT2A antagonist, is an oral medication that can be used to treat serotonin syndrome. Ondansetron is a 5-HT3 antagonist that may be administered intravenously for nausea and vomiting.

(Choices B and E) Delta and kappa are also opioid receptors that modulate pain. Although naloxone does bind to these receptors, it binds to mu opioid receptors with greatest affinity.

(Choices C and D) GABA is the primary inhibitory neurotransmitter in the brain and is the target of many drugs. Benzodiazepines and barbiturates work by binding to specific sites on GABA A receptors to facilitate inhibitory effects of GABA. Flumazenil is a GABA A benzodiazepine receptor antagonist used to reverse benzodiazepine intoxication. Baclofen is an agonist at the GABA B receptor that acts as a skeletal muscle relaxant. This patient's miosis and profound respiratory depression are more indicative of opioid overdose than benzodiazepine or baclofen intoxication.

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(Choice G) Glutamate is an excitatory neurotransmitter that binds to NMDA receptors. Ketamine, a general anesthetic, is an example of an NMDA receptor antagonist. Naloxone does not have effects on NMDA receptors.

Educational objective:
Naloxone is a pure opioid receptor antagonist used to treat opioid intoxication or overdose. Although it binds to mu, kappa, and delta opioid receptors, it has the greatest affinity for mu receptors (which mediate opioid-induced bradycardia and respiratory depression), making it an ideal agent for treating opioid intoxication.

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A 42-year-old man comes to the office for a checkup. He has no medical symptoms but says, "I'm just feeling stressed and not like myself." The patient is going through a contentious divorce. He is outraged that his wife is pursuing full custody of their children and says, "I can't believe she is doing this to me." His job as a legal researcher had been a welcome distraction from his upsetting personal life until yesterday when he was called to his supervisor's office for yelling at the receptionist when the copy machine ran out of ink. Which of the following is the best explanation for this patient's behavior toward the receptionist?

- A. Acting out
- B. Denial
- C. Displacement
- D. Intellectualization
- E. Reaction formation
- F. Splitting
- G. Sublimation

Submit

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- A. Acting out (5%)
- ✗ B. Denial (0%)
- ✓ C. Displacement (90%)
- D. Intellectualization (0%)
- E. Reaction formation (1%)
- F. Splitting (0%)
- G. Sublimation (0%)

Incorrect
Correct answer
C

90%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Key defense mechanisms	
	• Acting out: Expressing unacceptable feelings through actions

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Key defense mechanisms	
Immature	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist • Displacement: Transferring feelings to less threatening object/person • Intellectualization: Focusing on nonemotional aspects to avoid distressing feelings • Passive aggression: Avoiding conflict by expressing hostility covertly • Projection: Attributing one's own feelings to others • Rationalization: Justifying behavior to avoid difficult truths • Reaction formation: Transforming unacceptable feelings/impulses into the opposite • Regression: Reverting to earlier developmental stage • Splitting: Experiencing a person/situation as either all positive or all negative
Mature	• Sublimation: Channeling impulses into socially acceptable behaviors • Suppression: Putting unwanted feelings aside to cope with reality

This patient's redirection of his anger from his wife to the receptionist is an example of the defense mechanism **displacement**. In displacement, **emotions** are unconsciously **transferred** from their actual target **to someone** or something else that is **less threatening**. In this case, the patient is angry with his wife but cannot express it directly as it may impact the child custody proceedings. Instead, he unconsciously transfers the emotion to the receptionist, resulting in his angry outburst over a minor incident.

(Choice A) Acting out refers to the expression of unacceptable thoughts or impulses through actions (eg, if this patient were to react to his wife's pursuit of full custody by vandalizing her car).

(Choice B) In denial, an individual avoids awareness of external realities that are difficult to face (eg, if this patient were to insist that his marriage is conflict-free).

(Choice D) In intellectualization, an individual focuses on nonemotional aspects of a distressing situation to make

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(Choice A) Acting out refers to the expression of unacceptable thoughts or impulses through actions (eg, if this patient were to react to his wife's pursuit of full custody by vandalizing her car).

(Choice B) In denial, an individual avoids awareness of external realities that are difficult to face (eg, if this patient were to insist that his marriage is conflict-free).

(Choice D) In intellectualization, an individual focuses on nonemotional aspects of a distressing situation to make it more tolerable (eg, if this patient were solely preoccupied with thinking about the legal, not the emotional, aspects of his divorce).

(Choice E) Reaction formation involves transforming unacceptable feelings into their opposite (eg, if this patient, who is angry at his wife, were to act in an overly loving manner toward her).

(Choice F) Splitting involves experiencing the self or others in extremes, either all positive or all negative, which allows "bad" qualities to be completely separated from the "good" (eg, if this patient were to view his wife as a horrible person with no redeeming qualities).

(Choice G) Sublimation involves transforming unacceptable impulses into socially acceptable behaviors (eg, if this patient were to take up boxing as a means of venting frustration).

Educational objective:
In displacement, emotions are transferred from the person causing the negative emotions to a more neutral, less threatening person or object.

References

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A 35-year-old woman comes to the office due to insomnia and fatigue over the past month. She has felt increasingly depressed, irritable, and worthless since being let go from her job 5 weeks ago. The week prior to her last menstrual period was particularly difficult, and she stayed in bed most of the day. Over the last month, the patient has lost 3.6 kg (8 lb) and has felt unmotivated and unable to concentrate on looking for new work. Other medical conditions include hypothyroidism and migraine headaches. The patient drinks 1 or 2 glasses of wine a few times a week and smokes marijuana once a month. Medications include levothyroxine and naproxen. Physical examination is normal. TSH level is 0.9 μU/mL. Which of the following is the most likely diagnosis in this patient?

- A. Adjustment disorder with depressed mood
- B. Bipolar II disorder
- C. Depressive disorder due to another medical condition
- D. Major depressive disorder
- E. Persistent depressive disorder
- F. Premenstrual dysphoric disorder
- G. Substance-induced depressive disorder

Submit

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- A. Adjustment disorder with depressed mood (36%)
- ✗ B. Bipolar II disorder (0%)
- C. Depressive disorder due to another medical condition (10%)
- ✓ D. Major depressive disorder (44%)
- E. Persistent depressive disorder (2%)
- F. Premenstrual dysphoric disorder (2%)
- G. Substance-induced depressive disorder (2%)

Incorrect
Correct answer
D

44%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

Major depressive disorder

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Major depressive disorder	
Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure): ◦ Depressed mood ◦ Loss of interest or pleasure ◦ Change in appetite or weight ◦ Insomnia or hypersomnia ◦ Psychomotor retardation or agitation ◦ Low energy ◦ Poor concentration or indecisiveness ◦ Thoughts of worthlessness or inappropriate guilt ◦ Recurrent thoughts of death or suicide • No history of mania or hypomania • Not due to substances or another medical condition

This patient's symptoms (eg, depressed mood, feelings of worthlessness, low energy, insomnia, weight loss, and poor concentration) lasting **≥2 weeks** meets the criteria for **major depressive disorder** (MDD). The presence of MDD criterion symptoms for ≥2 weeks is all that is required for diagnosis, but the median duration of an MDD episode is approximately 6 months. Accurate diagnosis of MDD requires ruling out medical and substance-induced causes. Despite a history of hypothyroidism in this patient, her normal TSH level indicates that her hypothyroidism is adequately controlled with levothyroxine and would not be considered a medical cause of her depression **(Choice C)**.

Patients with sufficient depressive symptoms are diagnosed with MDD even if there is a clear psychosocial stressor that precipitated the depression (ie, this patient meets the criteria for MDD and therefore cannot be diagnosed with an adjustment disorder) **(Choice A)**. In patients who do not meet the criteria for MDD, adjustment

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poor concentration) lasting **≥2 weeks** meets the criteria for **major depressive disorder** (MDD). The presence of MDD criterion symptoms for ≥2 weeks is all that is required for diagnosis, but the median duration of an MDD episode is approximately 6 months. Accurate diagnosis of MDD requires ruling out medical and substance-induced causes. Despite a history of hypothyroidism in this patient, her normal TSH level indicates that her hypothyroidism is adequately controlled with levothyroxine and would not be considered a medical cause of her depression **(Choice C)**.

Patients with sufficient depressive symptoms are diagnosed with MDD even if there is a clear psychosocial stressor that precipitated the depression (ie, this patient meets the criteria for MDD and therefore cannot be diagnosed with an adjustment disorder) **(Choice A)**. In patients who do not meet the criteria for MDD, adjustment disorder with depressed mood may be diagnosed if sadness, distress, and functional impairment develop ≤3 months following a psychosocial stressor.

(Choice B) This patient has no known history of hypomanic episodes required for a diagnosis of bipolar II disorder.

(Choice E) Persistent depressive disorder is diagnosed when depressive symptoms have lasted ≥2 years. It includes both pure dysthymia and chronic major depression.

(Choice F) Some women with mood disorders report that their symptoms worsen before their menstrual periods. However, in premenstrual dysphoric disorder, depressive symptoms must remit with the onset of menses and the diagnosis must be confirmed by daily prospective ratings over several cycles.

(Choice G) In substance-induced depressive disorder, a substance (eg, drug of abuse, medication, toxin) is judged to be etiologically related to the mood disturbance. The extent of this patient's substance use makes it an unlikely cause of her depressive disorder.

Educational objective:
Patients with sufficient depressive symptoms are diagnosed with major depressive disorder even if there is a clear psychosocial stressor that precipitated the depression.

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A 14-year-old girl is brought to the office by her mother due to unusual behavior over the past year. The mother is concerned that her daughter seems overly anxious about eating, and says, "During lunch, she spent 45 minutes cutting the broccoli on her plate until all the pieces were the same size." The patient recently became a vegetarian and spends hours in the grocery store selecting vegetables and checking nutritional information. She also seems very concerned about her appearance; she brushes her hair 21 times on each side, parts her hair strand by strand, and plucks her eyebrows for an hour daily. The patient says, "If I don't keep things exactly even I'm afraid something bad might happen." The patient is medically healthy and has not yet started menstruating. She weighs 45.8 kg (101 lb) and is 157.5 cm (5 ft 2 in) tall. BMI is 18.5 kg/m^2. Physical examination is normal with the exception of extremely sparse eyebrows. Which of the following is the most likely primary diagnosis?

- A. Anorexia nervosa
- B. Body dysmorphic disorder
- C. Generalized anxiety disorder
- D. Obsessive-compulsive disorder
- E. Obsessive-compulsive personality disorder
- F. Trichotillomania

Submit

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- A. Anorexia nervosa (3%)
- ✗ B. Body dysmorphic disorder (3%)
- C. Generalized anxiety disorder (0%)
- ✓ D. Obsessive-compulsive disorder (70%)
- E. Obsessive-compulsive personality disorder (22%)
- F. Trichotillomania (0%)

Incorrect
Correct answer
D

70%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Obsessive-compulsive disorder

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Obsessive-compulsive disorder	

Clinical features	• **Obsessions**
	  ◦ Recurrent, intrusive, anxiety-provoking thoughts, urges, or images
	• **Compulsions**
	  ◦ Response to obsessions with repeated behaviors or mental acts
	  ◦ Behaviors not connected realistically with preventing feared event
	• Time-consuming (>1 hr/day) or causing significant distress or impairment

Treatment	• Selective serotonin reuptake inhibitor • Cognitive-behavioral therapy (exposure & response prevention)

This patient's repetitive behaviors with food and grooming appear to be compulsions performed in response to an obsession with symmetry and exactness, which is consistent with a primary diagnosis of **obsessive-compulsive disorder (OCD)**. Obsessions are **persistent and unwanted thoughts**, urges, or images that often drive an individual to perform compulsions: **ritualistic behaviors** or mental acts (eg, counting) to alleviate anxiety or prevent a feared event. In this situation, the patient's obsession with symmetry results in compulsions to cut her food into uniform pieces and groom her hair evenly to prevent a bad outcome.

Compulsive behaviors in OCD are often illogical (eg, skipping over sidewalk cracks to prevent injury to a relative) or are excessive in nature (eg, checking if the front door is locked 50 times a day). For diagnosis, obsessions or compulsions must be **time-consuming** (>1 hr/day) or cause significant **distress** or functional **impairment**. OCD is typically a chronic disorder starting in childhood or adolescence.

(Choice A) This patient has a normal BMI based on age and sex, and her unusual eating behaviors are related to her obsessions and compulsions rather than intense fear of weight gain.

(Choice B) In body dysmorphic disorder, individuals have a preoccupation with perceived defects in physical appearance. In contrast, this patient's eating and grooming rituals are driven by a symmetry obsession and the

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prevent a feared event. In this situation, the patient's obsession with symmetry results in compulsions to cut her food into uniform pieces and groom her hair evenly to prevent a bad outcome.

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(Choice A) This patient has a normal BMI based on age and sex, and her unusual eating behaviors are related to her obsessions and compulsions rather than intense fear of weight gain.

(Choice B) In body dysmorphic disorder, individuals have a preoccupation with perceived defects in physical appearance. In contrast, this patient's eating and grooming rituals are driven by a symmetry obsession and the need to prevent a feared event.

(Choice C) Generalized anxiety disorder involves excessive worry about multiple issues and is not associated with intrusive thoughts and compulsive behaviors.

(Choice E) Obsessive-compulsive personality disorder involves a lifelong pattern of insistence on control, orderliness, and perfection and does not include frank obsessions and compulsions that are present in OCD. Personality disorders are generally not diagnosed before age 18 (or in young adolescents) and would not explain this patient's recurrent compulsions performed in response to anxiety-inducing obsessions.

(Choice F) Trichotillomania (hair-pulling disorder) involves recurrent pulling of hair and repeated attempts to decrease or stop the behavior. It would not be diagnosed in this patient who pulls out her hair as part of a symmetry obsession and compulsions.

Educational objective:
Obsessive-compulsive disorder is characterized by persistent, unwanted thoughts (obsessions) and repetitive, time-consuming rituals (compulsions) that the individual feels driven to perform to alleviate anxiety.

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A 45-year-old man comes to the office due to chronic insomnia. The patient has trouble sleeping because he claims he must remain alert to protect himself from workers at a nearby chemical plant. He says they are poisoning him by secretly dumping toxic waste in his backyard at night. The patient's wife says, "He's been like this for the past 10 years. He gets very upset when asked for proof, so he's going to install cameras next week." She has never seen any unusual activity in the backyard and says that her husband has never received an actual threat or endured actual harm. He has ordered numerous soil toxicity tests over the years, all of which have been negative. The patient started working as a taxi driver at age 21 and continues to work for the same company. He has no history of psychiatric treatment. Which of the following is the most likely diagnosis for this patient?

- A. Delusional disorder
- B. Major depressive disorder with psychotic features
- C. Paranoid personality disorder
- D. Schizophrenia
- E. Schizophreniform disorder
- F. Schizotypal personality disorder

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- ✓ A. Delusional disorder (54%)
- B. Major depressive disorder with psychotic features (0%)
- C. Paranoid personality disorder (31%)
- D. Schizophrenia (8%)
- E. Schizophreniform disorder (1%)
- F. Schizotypal personality disorder (2%)

Correct

54% Answered correctly

04 secs Time Spent

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Explanation

Delusional disorder	
	>1 delusions for >1 months

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Delusional disorder	
Clinical features	• ≥1 delusions for ≥1 months • Other psychotic symptoms absent or not prominent • Behavior not obviously odd/bizarre; ability to function apart from delusion's impact • Subtypes: erotomanic, grandiose, jealous, persecutory & somatic
Treatment	• Antipsychotics • Cognitive-behavioral therapy

This patient's persistent belief that he is being poisoned is consistent with **delusional disorder**, which is characterized by **≥1 delusions** for **≥1 months**. Other positive psychotic symptoms, such as **hallucinations** and **disorganization**, are **absent**. Apart from the direct impact of the delusions (eg, this patient's insomnia, repeated soil testing), overall behavior in patients with delusional disorder is not obviously bizarre or odd, and general functioning is not significantly impaired (eg, this patient has a stable relationship and employment).

Patients with delusional disorder typically have a persistent, overriding delusion with a specific theme. The diagnosis is further classified based on the type of belief: erotomanic (believing someone is in love with them), grandiose (believing they have great talent, insights, or achievements), jealous (believing their partner is unfaithful), persecutory (believing they are being cheated, spied on, poisoned, or harassed), or somatic (believing bodily functions and sensations are abnormal).

(Choice B) Major depressive disorder with psychotic features can present with delusions as well as insomnia; however, this patient lacks other characteristic depressive symptoms (eg, persistent low mood, amotivation, fatigue, worthlessness), and his symptoms have not caused significant impairment in daily functioning.

(Choices C and F) Personality disorders involve persistent patterns of behavior usually arising in early adulthood. They are pervasive across a broad range of situations (eg, interpersonal, vocational) but do not involve specific delusions (eg, persistent false, fixed beliefs). Paranoid personality disorder is characterized by overarching suspiciousness or distrust (eg, if this patient were generally distrustful of many people, including the chemical plant

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soil testing), overall behavior in patients with delusional disorder is not obviously bizarre or odd, and general functioning is not significantly impaired (eg, this patient has a stable relationship and employment).

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(Choices D and E) Schizophrenia (≥6 months) and schizophreniform disorder (≥1 month and <6 months) are characterized by ≥2 of the following: delusions, hallucinations, disorganized speech, grossly disorganized or catatonic behavior, and negative symptoms. In contrast, patients with delusional disorder have delusions but no other psychotic symptoms.

Educational objective:
Delusional disorder is characterized by ≥1 delusions for ≥1 months in the absence of other psychotic symptoms. Behavior is not obviously bizarre, and functioning is not significantly impaired apart from the direct impact of the delusions.

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A 28-year-old man comes to the office due to persistent fatigue. For the past several weeks, he has been having trouble sleeping and is frequently late for work as he has difficulty getting out of bed. At work, his mind wanders, and his supervisor has commented that the quality of his work has deteriorated. The patient says, "I've been feeling down and don't feel like doing anything. My appetite is poor. I no longer go out with my friends and haven't gone to the gym in weeks." The patient has no significant medical or psychiatric history. He has 1 or 2 alcoholic drinks several days a week but does not use illicit drugs. Routine laboratory evaluation, including thyroid function tests and serum B_{12} level, is normal. Physical examination is unremarkable. Mental status examination shows a cooperative man with sad affect. No delusions are elicited. The patient says he sometimes wishes he could "go to sleep and not wake up," but has no suicidal intent or plan. First-line pharmacotherapy for this patient most likely involves a drug with which of the following mechanisms of action?

- A. Antagonism of dopamine D2 receptors
- B. Antagonism of serotonin 5-HT2 receptors
- C. Inhibition of sodium channels
- D. Inhibition of the serotonin transporter
- E. Inhibition of monoamine oxidase
- F. Potentiation of the effects of endogenous GABA

Submit

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- A. Antagonism of dopamine D2 receptors (2%)
- ✗ B. Antagonism of serotonin 5-HT2 receptors (18%)
- C. Inhibition of sodium channels (0%)
- ✓ D. Inhibition of the serotonin transporter (69%)
- E. Inhibition of monoamine oxidase (7%)
- F. Potentiation of the effects of endogenous GABA (2%)

Incorrect
Correct answer
D

69%
Answered correctly

09 secs
Time Spent

2023
Version

Explanation

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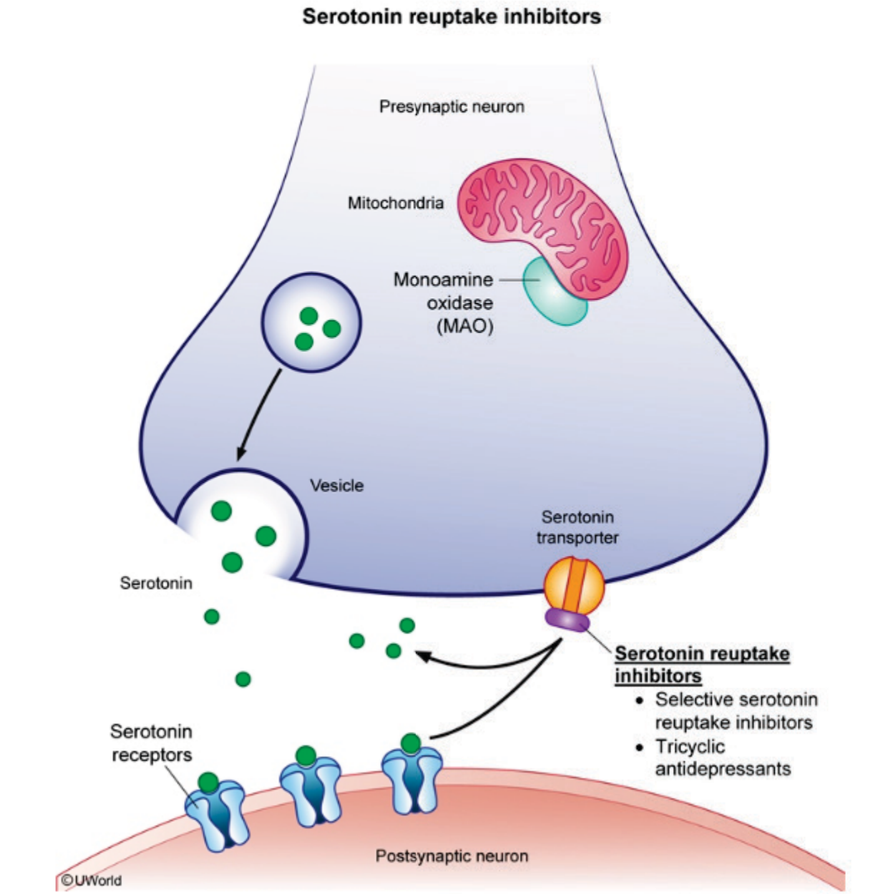
✓ ○ D. Inhibition of the serotonin transporter (69%)

Exhibit Display



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Vesicle

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This patient's several-week history of depressed mood, loss of interest, fatigue, impaired sleep, poor concentration and appetite, and thoughts of death is consistent with major depressive disorder. The major neurotransmitters involved in the pathophysiology of depression are thought to be serotonin and norepinephrine (and dopamine to a lesser extent). Most available antidepressant medications affect serotonin or both serotonin and norepinephrine at the synapse.

Selective serotonin reuptake inhibitors are considered **first-line antidepressants** that work by **inhibiting** the **serotonin transporter** (SERT) protein, which is normally responsible for transporting serotonin out of the synaptic cleft back into the presynaptic neuron. The inhibition of SERT prevents the normal reuptake of serotonin, resulting in increased availability of serotonin in the synaptic cleft.

(Choices A and B) These receptor activities are the primary mechanisms of action of antipsychotics used mainly to treat schizophrenia and other psychotic disorders and to augment antidepressants in the treatment of mood disorders. Potent antagonism of dopamine 2 receptors is the mechanism of action of first-generation antipsychotics such as haloperidol. Second-generation antipsychotics have comparatively less affinity for D2 receptors and the additional property of serotonin 5-HT2 receptor antagonism, which underlies their lower risk of extrapyramidal side effects. An antipsychotic would not be appropriate monotherapy for major depression without psychotic features.

(Choice C) Inhibition of sodium channels, resulting in stabilization of neuronal membranes, is the mechanism of action of some antiepileptic drugs (eg, carbamazepine). These drugs also have a role as mood stabilizers in bipolar disorder but are not a primary treatment for unipolar major depression.

(Choice E) Inhibition of monoamine oxidase is the mechanism of action of monoamine oxidase inhibitors used in treatment-resistant depression. These drugs are not used as first-line therapy due to their dietary restrictions and risk of serious adverse events (eg, hypertensive crisis, serotonin syndrome).

(Choice F) Benzodiazepines work to potentiate the effects of GABA, the major inhibitory neurotransmitter in the central nervous system, by facilitating the increased frequency of chloride channel opening in the GABA-A

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(Choice F) Benzodiazepines work to potentiate the effects of GABA, the major inhibitory neurotransmitter in the central nervous system, by facilitating the increased frequency of chloride channel opening in the GABA A receptor. They have sedative, hypnotic, anxiolytic, anticonvulsant, and muscle relaxant properties but are not a first-line treatment for depression.

Educational objective:
Most available antidepressants target the neurotransmission of serotonin or norepinephrine, or both. Inhibition of serotonin reuptake by blocking the serotonin transporter is the primary mechanism of action of selective serotonin reuptake inhibitors.

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Serotonin

reuptake inhibitors

Exhibit Display

Major depressive disorder	

Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure):
	  ◦ Depressed mood
	  ◦ Loss of interest or pleasure
	  ◦ Change in appetite or weight
	  ◦ Insomnia or hypersomnia
	  ◦ Psychomotor retardation or agitation
	  ◦ Low energy
	  ◦ Poor concentration or indecisiveness
	  ◦ Thoughts of worthlessness or inappropriate guilt
	  ◦ Recurrent thoughts of death or suicide
	• No history of mania or hypomania
	• Not due to substances or another medical condition

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bipolar disorder but are not a primary treatment for unipolar major depression.

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A 25-year-old man is brought to the emergency department due to severe agitation and aggressive behavior. He speaks loudly and rapidly, stating that he has "superpowers" of mind control and that violence is the only way to defend against "the conspiracy." The patient has a history of bipolar disorder and is prescribed olanzapine, lithium, and fluoxetine, although it is unclear if he has been compliant. The patient requires several doses of medication in the emergency department to calm down and is subsequently admitted to the hospital for further psychiatric evaluation. The following night he is found lying very still on his bed and does not respond to questions. Temperature is 40.6 C (105.1 F), blood pressure is 157/90 mm Hg, pulse is 102/min, and respirations are 20/min. Examination is significant for diaphoresis and diffuse rigidity in upper and lower extremities. Which of the following is the most likely explanation for this patient's current symptoms?

- A. Acute dystonic reaction
- B. Akathisia
- C. Drug-induced parkinsonism
- D. Lithium toxicity
- E. Neuroleptic malignant syndrome
- F. Serotonin syndrome

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- A. Acute dystonic reaction (5%)
- B. Akathisia (1%)
- ✗ C. Drug-induced parkinsonism (2%)
- D. Lithium toxicity (2%)
- ✓ E. Neuroleptic malignant syndrome (78%)
- F. Serotonin syndrome (10%)

Incorrect
Correct answer
E

78%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

	Neuroleptic malignant syndrome	Serotonin syndrome

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	Neuroleptic malignant syndrome	Serotonin syndrome
Precipitant	• Dopamine antagonist	• Serotonergic agent
Onset	• 1-3 days	• <1 day
Overlapping features	• Altered mental status • Sympathetic hyperactivity (eg, hyperthermia, hypertension, tachycardia, diaphoresis)	• Altered mental status • Sympathetic hyperactivity (eg, hyperthermia, hypertension, tachycardia, diaphoresis)
Distinct features	• Diffuse rigidity ("lead-pipe") • Hyporeflexia	• Clonus • Hyperreflexia

This patient is experiencing a manic episode with psychotic features and most likely received multiple doses of antipsychotic medication to control his agitation in the emergency department. His **hyperthermia**, **sympathetic hyperactivity** (eg, diaphoresis, tachycardia), severe **muscle rigidity** (frequently described as "lead-pipe rigidity"), and **altered mental status** are characteristic of **neuroleptic malignant syndrome (NMS)**.

NMS is a potentially life-threatening adverse reaction to **antipsychotics** (ie, neuroleptics) that typically presents 1-3 days after initiation or dose escalation. It is thought to be caused by antagonism of central dopaminergic systems involved in thermoregulation and regulation of muscle tone and movement. Treatment involves cessation of the causative agent; benzodiazepines and **dantrolene** (a postsynaptic muscle relaxant) are used for treating severe cases.

(Choices A, B, and C) Antipsychotic D2 dopamine receptor antagonism in the nigrostriatal pathway can cause a variety of reactions (known as extrapyramidal symptoms) that can be confused with NMS. Acute dystonic reactions involve distressing contractions of the neck, mouth, and tongue. Akathisia is a subjective feeling of intense restlessness and an inability to sit still. Drug-induced parkinsonism manifests as rigidity, bradykinesia, and tremor. None of these conditions involves altered mental status, hyperthermia, or sympathetic hyperactivity.

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(Choice D) Lithium is a mood stabilizer used in bipolar disorder but is not used to control acute agitation and psychosis. Acute lithium toxicity typically begins with nausea, vomiting, and diarrhea, with neuromuscular signs developing later.

(Choice F) Although serotonin syndrome (due to overdose or combinations of serotonergic drugs) can also present with mental status changes, hyperthermia, and sympathetic hyperactivity, it typically presents with neuromuscular hyperactivity (eg, clonus, hyperreflexia) as opposed to the diffuse rigidity seen in NMS and in this patient.

Educational objective:
Neuroleptic malignant syndrome (NMS) is an adverse reaction to antipsychotic medication characterized by severe "lead-pipe" rigidity, hyperthermia, sympathetic hyperactivity, and mental status changes. NMS is characterized by

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Educational objective:
Neuroleptic malignant syndrome (NMS) is an adverse reaction to antipsychotic medication characterized by severe "lead-pipe" rigidity, hyperthermia, sympathetic hyperactivity, and mental status changes. NMS is characterized by severe rigidity rather than the neuromuscular irritability (eg, hyperreflexia, myoclonus) seen in serotonin syndrome.

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A 38-year-old man is brought to the emergency department by ambulance due to severe abdominal pain and undergoes an emergency appendectomy. Following a successful operation and recovery, the patient questions whether the appendectomy was absolutely necessary. He doubts the surgeon's explanation that the surgery was potentially lifesaving, angrily suggests that the hospital is taking advantage of his excellent medical insurance, and makes vague threats to sue the hospital. He asks to be discharged immediately, and explains, "I've earned everything I have on my own, and this hospital isn't getting any of it." When asked if he has any relatives or friends the team can speak with, he says, "I haven't talked to my family in 20 years, and I wouldn't call anyone my friend. Even if I did, that's none of your business." Which of the following is the most likely explanation of this patient's behavior?

- A. Antisocial personality disorder
- B. Brief psychotic disorder
- C. Delusional disorder, persecutory type
- D. Narcissistic personality disorder
- E. Paranoid personality disorder
- F. Schizoid personality disorder
- G. Schizotypal personality disorder

Submit

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- A. Antisocial personality disorder (6%)
- ✗ B. Brief psychotic disorder (1%)
- C. Delusional disorder, persecutory type (9%)
- D. Narcissistic personality disorder (23%)
- ✓ E. Paranoid personality disorder (47%)
- F. Schizoid personality disorder (10%)
- G. Schizotypal personality disorder (2%)

Incorrect
Correct answer
E

47%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

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Paranoid personality disorder	
Clinical features	• Pervasive pattern of distrust & suspiciousness beginning in early adulthood & occurring in a variety of settings (no clear delusions) ◦ Believes being exploited & deceived by others ◦ Interprets benign comments & events as threats; reacts angrily ◦ Bears grudges ◦ Questions loyalty of partner without justification
Differential diagnosis	• Delusional disorder (delusions only) • Schizophrenia (delusions, hallucinations, disorganization, negative symptoms) • Schizotypal personality disorder (eccentric behavior & thinking, unusual perceptual experiences)

This patient's distrust, suspicion about the surgeon's motives, and lack of sustained relationships are suggestive of **paranoid personality disorder**. Patients with this disorder exhibit a **pattern** of **pervasive distrust** of others beginning in early adulthood. These individuals tend to have minimal interpersonal relationships due to doubts about others' intentions and concerns that personal information will be used against them.

Although paranoid personality disorder involves paranoid interpretations of benign comments and events, it can be differentiated from psychotic disorders by the lack of persistent, well-developed delusions and other psychotic symptoms (eg, hallucinations, disorganized speech or behavior).

(Choice A) Antisocial personality disorder is characterized by a pattern of disregard for, and violation of, the rights of others.

(Choice B) Although onset of brief psychotic disorder (≥1 psychotic symptoms lasting ≥1 day and <1 month) is usually sudden and in the context of a stressor, this patient's pattern of pervasive distrust of others started well before his appendectomy and is more consistent with paranoid personality disorder.

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paranoid personality disorder. Patients with this disorder exhibit a **pattern** of **pervasive distrust** of others beginning in early adulthood. These individuals tend to have minimal interpersonal relationships due to doubts about others' intentions and concerns that personal information will be used against them.

Although paranoid personality disorder involves paranoid interpretations of benign comments and events, it can be differentiated from psychotic disorders by the lack of persistent, well-developed delusions and other psychotic symptoms (eg, hallucinations, disorganized speech or behavior).

(Choice A) Antisocial personality disorder is characterized by a pattern of disregard for, and violation of, the rights of others.

(Choice B) Although onset of brief psychotic disorder (≥1 psychotic symptoms lasting ≥1 day and <1 month) is usually sudden and in the context of a stressor, this patient's pattern of pervasive distrust of others started well before his appendectomy and is more consistent with paranoid personality disorder.

(Choice C) This patient does not have persistent, fixed, false beliefs as found in delusional disorder, which is characterized by ≥1 delusions lasting ≥1 months in the absence of other psychotic symptoms.

(Choice D) Narcissistic personality disorder consists of a pervasive pattern of grandiosity, need for admiration, sense of entitlement, and lack of empathy. Behaviors and interactions are often motivated by a need for attention and praise.

(Choice F) Individuals with schizoid personality disorder are aloof and socially detached but do not have overt paranoid ideation.

(Choice G) Schizotypal personality disorder is characterized by magical beliefs, social anxiety, eccentric behavior, and odd perceptual experiences.

Educational objective:
Individuals with paranoid personality disorder exhibit a lifelong pattern of pervasive suspicion and distrust. Unlike patients with psychotic disorders, they do not have fixed delusions and other psychotic symptoms.

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A 52-year-old woman comes to the office for a checkup. Her medical problems include hypertension and hypercholesterolemia. The patient has a long-standing relationship with her primary care physician, who has treated her children as well. During the examination, she confides that she has been "down" since her youngest child left for college 2 months ago. The patient is worried about her daughter being away from home for the first time and whether she will be successful at school. At work, the patient occasionally has lapses of concentration when worrying about whether her daughter is okay, but it has not affected her productivity. She says, "I still enjoy going out with my husband but all we do is talk about our kids." The patient has occasional insomnia and tension headaches but notes that these are nothing new. Physical examination is normal. Which of the following is the most likely explanation for this patient's condition?

- A. Adjustment disorder with depressed mood
- B. Generalized anxiety disorder
- C. Major depressive disorder
- D. Normal sadness
- E. Persistent depressive disorder

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- A. Adjustment disorder with depressed mood (27%)
- ✗ B. Generalized anxiety disorder (4%)
- C. Major depressive disorder (0%)
- ✓ D. Normal sadness (66%)
- E. Persistent depressive disorder (0%)

Incorrect
Correct answer
D

66%
Answered correctly

04 secs
Time Spent

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Explanation

Differential diagnosis of depressed mood	
	• ≥2 weeks

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Differential diagnosis of depressed mood	
Major depressive disorder	• ≥2 weeks • **≥5 of 9** symptoms: depressed mood & SIGECAPS • Significant functional impairment • No lifetime history of mania
Persistent depressive disorder (dysthymia)	• Chronic depressed mood ≥2 years • ≥2 of the following: appetite disturbance, sleep disturbance, low energy, low self-esteem, poor concentration, hopelessness
Adjustment disorder with depressed mood	• Onset within 3 months of identifiable stressor • Marked distress &/or functional impairment • Does not meet criteria for another DSM-5 disorder
Normal stress response	• Not excessive or out of proportion to severity of stressor • No significant functional impairment
SIGECAPS = **S**leep disturbance, loss of **I**nterest, excessive **G**uilt, low **E**nergy, impaired **C**oncentration, **A**ppetite disturbance, **P**sychomotor agitation/retardation, and **S**uicidal ideation.	

Periods of sadness are a normal part of human experience and should not be diagnosed as a psychiatric disorder unless criteria are met for severity, duration, and clinically significant distress or impairment. This patient's mild depression in response to life changes is consistent with **normal sadness**. She does not meet the full criteria for any disorder. In addition, her insomnia and headaches are no different from her baseline. Significantly, her **social and occupational functioning** is **not impaired**, which is a DSM-5 requirement for the diagnosis of most psychiatric disorders, including adjustment disorders.

(Choice A) Adjustment disorder involves the development of anxiety and/or depression symptoms within 3 months of the onset of the stressor with associated marked distress (exceeding what would normally be expected) and/or

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Periods of sadness are a normal part of human experience and should not be diagnosed as a psychiatric disorder unless criteria are met for severity, duration, and clinically significant distress or impairment. This patient's mild depression in response to life changes is consistent with **normal sadness**. She does not meet the full criteria for any disorder. In addition, her insomnia and headaches are no different from her baseline. Significantly, her **social and occupational functioning** is **not impaired**, which is a DSM-5 requirement for the diagnosis of most psychiatric disorders, including adjustment disorders.

(Choice A) Adjustment disorder involves the development of anxiety and/or depression symptoms within 3 months of the onset of the stressor with associated marked distress (exceeding what would normally be expected) and/or significant functional impairment.

(Choice B) The duration and severity of this patient's worry about her daughter are not sufficient for a diagnosis of generalized anxiety disorder. This disorder requires ≥6 months of excessive worry and anxiety about multiple issues.

(Choices C and E) A diagnosis of major depressive disorder requires a 2-week period of ≥5 of 9 symptoms; depressed mood, decreased interest/pleasure, appetite disturbance, sleep disturbance, psychomotor agitation/retardation, loss of energy, excessive guilt, impaired concentration, and suicidal ideation. In persistent depressive disorder, depressive symptoms last ≥2 years.

Educational objective:
Evaluation of depressive symptoms occurring in response to psychosocial stressors must take into account the severity, duration, and degree of functional impairment. Mild or brief sadness without significant interference in psychosocial functioning is consistent with normal sadness.

References

- Uncomplicated depression is normal sadness, not depressive disorder: further evidence from the NESARC.
- Depression and the medicalization of sadness: conceptualization and recommended help-seeking.

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A 35-year-old woman comes to the office due to worsening fatigue and tension headaches over the past year. She describes always feeling "on edge" and lies awake at night worrying about various issues such as whether she is good at her job, whether her grown children like her, if she will get cancer one day, and whether her house will be broken into. During the day she feels tired and her shoulders and neck ache; she has difficulty concentrating on her work and has become increasingly concerned about losing her job. The patient has no medical or psychiatric history. Physical examination and routine laboratory studies, including thyroid function tests, are normal. The patient's anxiety has never been treated, but she once took a tablet of alprazolam offered by a friend. This lowered her anxiety, but the effect did not last long. The patient drinks a glass of wine on rare social occasions and does not use illicit drugs. Which of the following is the most appropriate pharmacotherapy for this patient?

- A. Alprazolam
- B. Bupropion
- C. Citalopram
- D. Clonazepam
- E. Diazepam
- F. Propranolol

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- A. Alprazolam (2%)
- ✗ B. Bupropion (12%)
- ✓ C. Citalopram (62%)
- D. Clonazepam (6%)
- E. Diazepam (14%)
- F. Propranolol (2%)

Incorrect
Correct answer
C

62%
Answered correctly

05 secs
Time Spent

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Explanation

This patient's excessive and chronic worry, feeling on edge, muscle tension, and insomnia are characteristic of

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This patient's excessive and chronic worry, feeling on edge, muscle tension, and insomnia are characteristic of generalized anxiety disorder (GAD). Patients with GAD have multiple worries about everyday issues (eg, work, health, finances, safety of family members) that cause significant distress and functional impairment. GAD is treated with **cognitive behavioral psychotherapy** and/or antidepressant medication. Selective serotonin reuptake inhibitors **(SSRIs)** such as citalopram or serotonin-norepinephrine reuptake inhibitors **(SNRIs)** are **first-line treatment**. This patient's insomnia should improve as the medication takes effect and her anxiety decreases.

Although this patient experienced acute relief with alprazolam, benzodiazepines are less preferred in the treatment of chronic anxiety. Benzodiazepines (eg, alprazolam, clonazepam, diazepam) are considered second-line therapy due to the risks of dependence and tolerance, and the potential for rebound and withdrawal syndromes with abrupt discontinuation **(Choices A, D, and E)**. Benzodiazepines can be used on a limited basis to manage acute anxiety while waiting for SSRIs or SNRIs to take effect. However, they should be avoided in patients with a history of substance use disorder.

(Choice B) Bupropion is a norepinephrine dopamine reuptake inhibitor approved for the treatment of major depressive disorder and smoking cessation. It is not a first-line agent for GAD and may worsen symptoms due to its activating effects. Bupropion should not be confused with buspirone, a non-benzodiazepine anxiolytic that is another second-line treatment option for GAD.

(Choice F) Propranolol, a beta-adrenergic blocker, can be used as needed for the performance subtype of social anxiety disorder and in the prophylactic treatment of migraine headaches. Beta blockers are not a first-line treatment for GAD. This patient's headaches are related to muscle tension, which should improve as her anxiety is treated.

Educational objective:
Serotonin reuptake inhibitors and serotonin-norepinephrine reuptake inhibitors are first-line medications for generalized anxiety disorder. Benzodiazepines should be limited to short-term use while antidepressants take effect and avoided in patients with a history of substance abuse.

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Exhibit Display

Generalized anxiety disorder in children & adolescents	

Clinical features	• Excessive, uncontrollable worry (multiple issues) ≥6 months
	• ≥1 of the following symptoms:
	  ◦ Restlessness; feeling on edge
	  ◦ Fatigue
	  ◦ Difficulty concentrating
	  ◦ Irritability
	  ◦ Muscle tension
	  ◦ Sleep disturbance

Associated features	• Physical symptoms: stomachaches, headaches • Perfectionism
Treatment	• Cognitive-behavioral therapy • SSRIs or SNRIs
Differential diagnosis	• Adjustment disorder (response to identifiable stressor) • Obsessive-compulsive disorder (intrusive thoughts; compulsive behaviors) • Separation anxiety disorder (anxiety focused on separation from caregiver) • Social anxiety disorder (fears of negative evaluation in social/performance situations)
SNRI = serotonin-norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor.	

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Educational objective:

Serotonin reuptake inhibitors and serotonin-norepinephrine reuptake inhibitors are first-line medications for

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A 72-year-old woman is admitted to the hospital due to abnormal vaginal bleeding. Uterine cancer is diagnosed and the patient is scheduled for a hysterectomy. Following successful surgery, the patient compliments her surgeon, exclaiming that she is "a brilliant doctor who saved my life." After an uneventful recovery, the patient is ready to return home. On the day of discharge, a nurse informs her that the surgeon is running late due to an emergency. The patient responds angrily that the surgeon is "terrible and doesn't care about patients." Which of the following is the most likely explanation for this patient's behavior?

- A. Acting out
- B. Displacement
- C. Passive aggression
- D. Projection
- E. Reaction formation
- F. Splitting

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- A. Acting out (3%)
- ✗ B. Displacement (2%)
- C. Passive aggression (1%)
- D. Projection (1%)
- E. Reaction formation (5%)
- ✓ F. Splitting (85%)

Incorrect
Correct answer
F

85%
Answered correctly

05 secs
Time Spent

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Explanation

Key defense mechanisms	
	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist

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Key defense mechanisms	
Immature	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist • Displacement: Transferring feelings to less threatening object/person • Intellectualization: Focusing on nonemotional aspects to avoid distressing feelings • Passive aggression: Avoiding conflict by expressing hostility covertly • Projection: Attributing one's own feelings to others • Rationalization: Justifying behavior to avoid difficult truths • Reaction formation: Transforming unacceptable feelings/impulses into the opposite • Regression: Reverting to earlier developmental stage • Splitting: Experiencing a person/situation as either all positive or all negative
Mature	• Sublimation: Channeling impulses into socially acceptable behaviors • Suppression: Putting unwanted feelings aside to cope with reality

Defense mechanisms are unconscious means of responding and adapting to situations to minimize anxiety and promote self-preservation. **Splitting** is a defense mechanism that involves **experiencing the self or others in extremes**, either all positive or all negative, which allows "bad" qualities to be completely separated from the "good." Although splitting provides a less complicated way of looking at people and situations, it prevents the integration of positive and negative qualities into a cohesive whole, resulting in unpredictable fluctuations between the two extremes.

In this situation, the patient initially idealizes the surgeon but later characterizes her as the opposite extreme when frustrated and disappointed that she is running late. Splitting is commonly seen in **borderline personality disorder** and can contribute to the unstable relationships and mood instability that exemplify this disorder.

(Choice A) Acting out refers to the expression of unacceptable thoughts or impulses through actions (eg, if this

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(Choice A) Acting out refers to the expression of unacceptable thoughts or impulses through actions (eg, if this patient reacted by tearing up her discharge paperwork or throwing her food tray at the nurse).

(Choice B) In displacement, negative feelings associated with a person or situation are transferred to a less threatening object or person (eg, if this patient said the nurse was "terrible" and unresponsive to her needs when in fact it is how she feels about the surgeon).

(Choice C) Passive aggression involves expressing hostility indirectly in an unassertive way (eg, if this patient expressed her anger by remaining noncommunicative during the discharge process or deliberately neglected to sign her discharge papers).

(Choice D) In projection, one's own unacceptable thoughts or feelings are perceived as coming from someone else (eg, if this patient on the day of discharge felt that the surgeon was angry with her).

(Choice E) Reaction formation is the redirection of an unacceptable impulse into its opposite (eg, if this patient sent the physician a thank-you note and lavish gift instead of expressing her anger).

Educational objective:
Splitting is a defense mechanism that involves organizing experiences of the self or others into extremes to keep

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promote self-preservation. **Splitting** is a defense mechanism that involves **experiencing the self or others in extremes**, either all positive or all negative, which allows "bad" qualities to be completely separated from the "good." Although splitting provides a less complicated way of looking at people and situations, it prevents the integration of positive and negative qualities into a cohesive whole, resulting in unpredictable fluctuations between the two extremes.

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(Choice E) Reaction formation is the redirection of an unacceptable impulse into its opposite (eg, if this patient sent the physician a thank-you note and lavish gift instead of expressing her anger).

Educational objective:
Splitting is a defense mechanism that involves organizing experiences of the self or others into extremes to keep positive and negative aspects separated. It is commonly seen in patients with borderline personality disorder.

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A 64-year-old man is brought to the office for evaluation of abnormal behaviors during sleep. According to his wife, over the past 3 months the patient has had episodes of repeatedly punching at the pillow and screaming loudly while asleep. When awakened from these episodes, he recalls a disturbing dream in which he is chased by assailants and must defend himself or escape. The episodes usually last less than 1-2 minutes. Vital signs are within normal limits. General physical and mental status examinations show no abnormalities. A formal sleep study (polysomnogram) is ordered. Which of the following is most likely to be identified during this testing?

- A. Excessive, sustained muscle tone during REM sleep
- B. Focal epileptic activity originating from the temporal lobe with secondary generalization
- C. Focal, sharp epileptic activity originating from the frontal lobes
- D. Mixture of wake-like and sleep-like states in different cortical regions in non-REM sleep
- E. Sleep latency of less than 5 minutes and multiple sleep-onset REM periods

Submit

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- ✓ A. Excessive, sustained muscle tone during REM sleep (40%)
- ✗ B. Focal epileptic activity originating from the temporal lobe with secondary generalization (2%)
- C. Focal, sharp epileptic activity originating from the frontal lobes (4%)
- D. Mixture of wake-like and sleep-like states in different cortical regions in non-REM sleep (31%)
- E. Sleep latency of less than 5 minutes and multiple sleep-onset REM periods (20%)

Incorrect
Correct answer
A

40%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

Sleep stages		
	EEG pattern & frequencies	**Characteristics**
Non-REM stage 1 (N1)	• Theta waves (4-7.9 Hz)	• Wakefulness-sleep transition • Easy to wake

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Sleep stages		
	EEG pattern & frequencies	**Characteristics**
Non-REM stage 1 (N1)	• Theta waves (4-7.9 Hz)	• Wakefulness-sleep transition • Easy to wake
Non-REM stage 2 (N2)	• Theta waves (4-7.9 Hz) • Sleep spindles & K complexes	• Largest percentage of sleep
Non-REM stage 3 (N3)	• Delta waves (<4 Hz)	• Prominent 1st half of night • Difficult to wake • Sleepwalking & night terrors
REM	• EEG resembles wakefulness • Occasional sawtooth waves	• Prominent 2nd half of night • Dreams, REMs, muscle atonia • REM sleep behavior disorder & nightmare disorder
EEG = electroencephalogram; **REM** = rapid eye movement.		

This patient's repeated nocturnal episodes of violent motor behaviors reflecting dream enactment are consistent with **REM sleep behavior disorder** (RBD).

Normal REM sleep is characterized by **vivid dreams**, rapid eye movements, and **voluntary muscle atonia** due to inhibition of motor neurons. In patients with RBD, degeneration of the brainstem nuclei responsible for inhibiting spinal motor neurons during normal REM sleep leads to **incomplete or absent muscle atonia** (ie, excessive, sustained muscle tone during REM sleep), facilitating **dream enactment** behaviors. Episodes typically occur at least 90 minutes after sleep onset, coinciding with the onset of REM sleep, and are more frequent in the second half of the night when the percentage of REM sleep increases. Patients can usually be awakened fairly easily and

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RBD is more likely to occur in older adult men (average age 61 years). It can be caused by medications (eg, antidepressants, narcolepsy medications). It may also be a prodromal sign of neurodegeneration with risk of subsequent onset of Parkinson disease or dementia with Lewy bodies.

(Choices B and C) Sleep can trigger seizures in patients with many types of epilepsy. Epileptiform discharges often start from a specific focus (eg, temporal or frontal lobe) and may or may not generalize. This can cause rhythmic jerking and myoclonus, but complex motor behaviors corresponding with dream content (ie, dream enactment) are more consistent with RBD. Furthermore, REM sleep is somewhat protective in epilepsy; seizures most often occur during non-REM (NREM) sleep.

(Choice D) This describes EEG findings that are common in NREM parasomnias (eg, sleep terrors, sleep walking). Although these can present with movement during sleep, patients are not alert upon awakening and have no memory of the event. In addition, NREM parasomnias most commonly present in childhood.

(Choice E) Short sleep latency and sleep-onset REM periods are characteristic of narcolepsy, a disorder characterized by chronic excessive daytime sleepiness, intrusions of REM sleep phenomena (eg, hypnagogic hallucinations, sleep paralysis), and cataplexy (emotionally triggered muscle weakness). Narcolepsy typically begins in young adulthood.

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Educational objective:
REM sleep behavior disorder is a parasomnia characterized by dream-enactment behaviors due to a loss of atonia during REM sleep. Patients can usually be awakened fairly easily, are alert and oriented, and can immediately recall their dreams.

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A 24-month-old girl is brought to the office by her mother due to concerns about walking. The mother says, "She seems so unsteady when she walks. She was walking so well until a few weeks ago, and now she keeps tripping over things." On examination, the patient is sitting on the floor and clapping her hands. She does not answer questions and instead makes babbling sounds. When her mother encourages her to walk, the patient pulls to stand using a chair and has an unsteady gait. The remainder of the examination is normal apart from abrasions on both knees, which her mother explains are from frequent falls. Height and weight track at the 50th percentile. At a checkup 6 months ago, the patient had been saying 1- or 2-word phrases and walking without aid. Which of the following neuropathic changes most likely underlies this patient's presentation?

- A. Accumulation of hyperphosphorylated tau protein
- B. Arrested brain development
- C. Copper deposition in the lenticular nucleus
- D. Cortical hyperexpansion
- E. Hypoxic ischemic injury during delivery

Submit

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- A. Accumulation of hyperphosphorylated tau protein (11%)
- ✓ B. Arrested brain development (48%)
- C. Copper deposition in the lenticular nucleus (21%)
- D. Cortical hyperexpansion (17%)
- E. Hypoxic ischemic injury during delivery (2%)

Correct

48% Answered correctly

05 secs Time Spent

2023 Version

Explanation

Rett syndrome	
Epidemiology	• Rare, girls > boys • Onset age 6-18 months

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Rett syndrome	
Epidemiology	• Rare, girls > boys • Onset age 6-18 months
Clinical features	• Initially normal development followed by: ◦ Loss of speech ◦ Loss of purposeful hand use ◦ Stereotypical hand movements (eg, wringing) ◦ Gait abnormalities ◦ Seizures ◦ Microcephaly
Neuropathology	• *MECP2* gene mutations (sporadic, X chromosome) • Arrested brain development (not neurodegeneration)
Prognosis	• Slow deterioration leading to death in middle age

This child who was previously meeting developmental milestones now has dramatic regression of speech and motor milestones accompanied by repetitive hand movements, which is concerning for **Rett syndrome** (RS). RS is a sporadic, X-linked genetic disorder characterized by **normal development** until age 6-18 months, when **regression of speech**, loss of purposeful hand movements, development of **stereotypical movements** (eg, clapping), and **gait abnormalities** occur.

MECP2 is a gene encoded on the X chromosome that has abundant expression in the brain. It is thought to impact synaptic maturation and cortical maintenance. Neuropathology is consistent with **arrested brain development** (eg, impaired dendritic maturation, reduced neuromelanin in substantia nigra) rather than death of neurons (ie, neurodegeneration). Brain growth decelerates after birth, with no further growth after age 4.

(Choice A) The accumulation of hyperphosphorylated tau protein, seen in Alzheimer disease, is neurotoxic and

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(Choice A) The accumulation of hyperphosphorylated tau protein, seen in Alzheimer disease, is neurotoxic and can lead to neuronal cell death. However, neuropathology in RS is characterized by arrested development rather than neuronal degeneration.

(Choice C) Copper deposition in the lenticular nucleus is characteristic of Wilson disease. Although Wilson disease can present with neuropsychiatric symptoms, including dysarthria and ataxia, it typically presents in adolescence with liver disease; Kayser-Fleischer rings are nearly always present by the time neurologic symptoms develop.

(Choice D) Cortical hyperexpansion seems to underly the brain enlargement associated with autism spectrum disorder (ASD). Although ASD can present in toddlers with regression of speech and stereotypical movements (eg, flapping, clapping), it does not usually cause regression of gross motor milestones (eg, walking).

(Choice E) Hypoxic ischemic injury during delivery can lead to neonatal encephalopathy, a condition which can result in decreased level of consciousness, seizures, and impaired respiration. However, it would present as neurologic abnormalities shortly after birth, rather than as a regression in milestones after previous normal development.

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Educational objective:
Rett syndrome is a genetic disorder characterized by normal development until age 6-18 months, when regression of speech, loss of purposeful hand movements, development of stereotypical movements, and gait abnormalities occur. Neuropathology shows arrested brain development rather than neurodegeneration.

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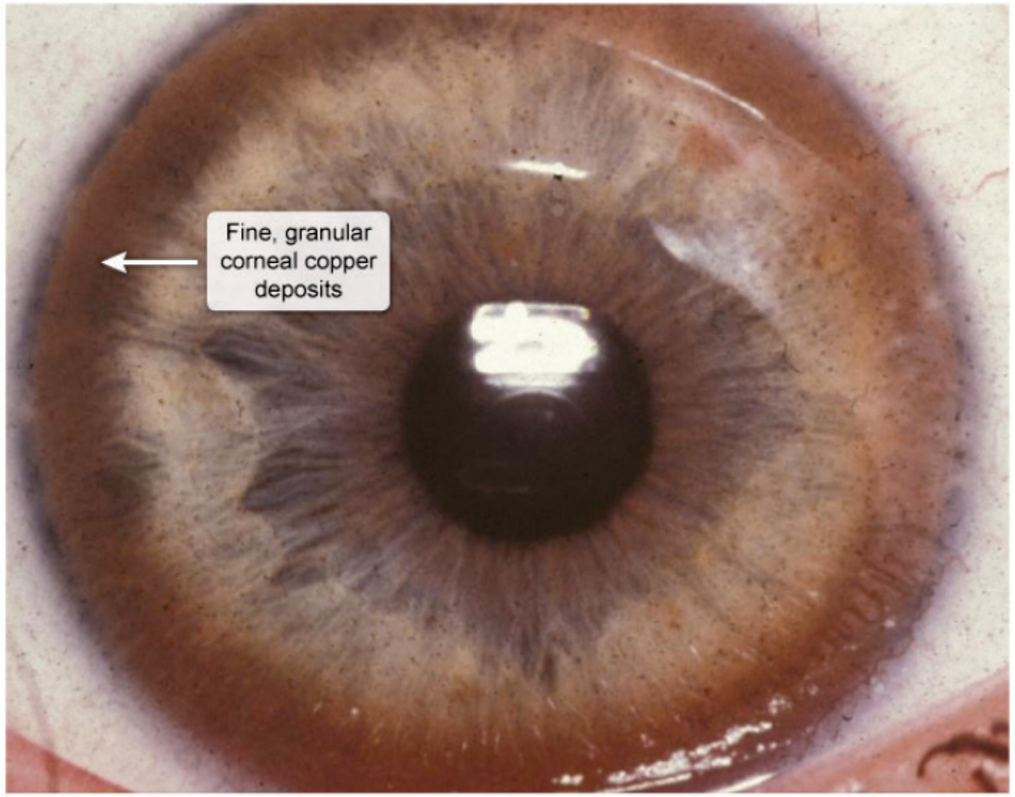
Kayser-Fleischer ring (Wilson disease)



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A 23-year-old woman comes to the emergency department due to chest pain, dyspnea, palpitations, perioral numbness, and sweating. She is extremely anxious and explains that her symptoms came on suddenly for no apparent reason. The patient has had similar episodes 2 or 3 times a week for the past several months. Her blood pressure is 150/90 mm Hg, pulse is 100/min, and respirations are 28/min. Cardiac enzymes are normal, and an ECG shows normal sinus rhythm with no ST-segment or T-wave abnormalities. The patient is diagnosed with panic disorder. She receives medication and feels better within an hour. Which of the following best describes the mechanism of action of the medication she received?

- A. Affects G protein signal transduction
- B. Alters GABA metabolism
- C. Binds allosterically to the GABA receptor
- D. Competes with GABA at its binding site
- E. Physically blocks the ion channel lumen
- F. Upregulates GABA receptor density

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- A. Affects G protein signal transduction (3%)
- ✗ B. Alters GABA metabolism (3%)
- ✓ C. Binds allosterically to the GABA receptor (76%)
- D. Competes with GABA at its binding site (7%)
- E. Physically blocks the ion channel lumen (3%)
- F. Upregulates GABA receptor density (6%)

Incorrect
Correct answer
C

76%
Answered correctly

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Time Spent

2023
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Explanation

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Explanation

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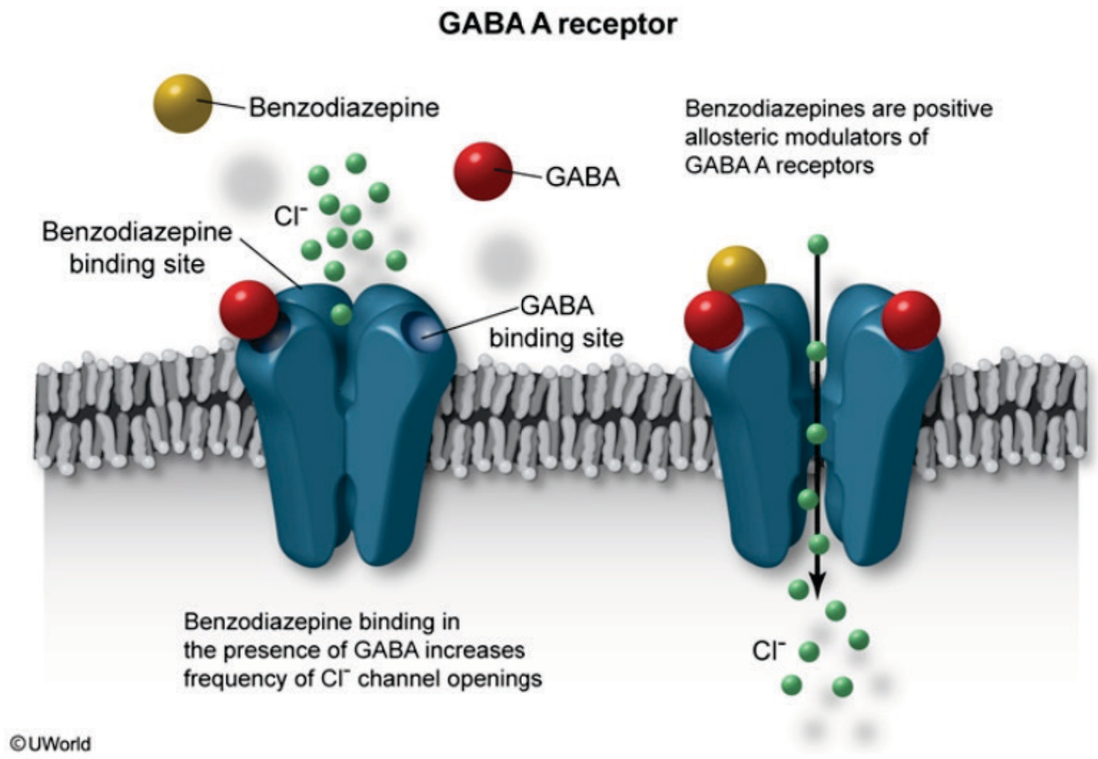

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decarboxylase. The $GABA_A$ receptor complex consists of 5 subunits and a central chloride ion channel, with

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This patient exhibits classic symptoms of a panic attack (abrupt and unexpected onset of characteristic physical symptoms and negative medical workup). She most likely received a benzodiazepine, a medication commonly used in emergency settings because it provides rapid relief of acute anxiety.

Benzodiazepines work at the $GABA_A$ (γ-aminobutyric acid) receptor complex. **GABA** is the **main inhibitory neurotransmitter** in the central nervous system and is synthesized from glutamate using glutamate decarboxylase. The $GABA_A$ receptor complex consists of 5 subunits and a central chloride ion channel, with different binding sites for GABA and various drugs (eg, benzodiazepines, barbiturates). **Benzodiazepines** act by binding to the benzodiazepine binding site, which **allosterically modulates** the **binding of GABA**, resulting in an **increased** frequency of **chloride ion channel opening**. The influx of chloride ions into the neurons causes neuronal hyperpolarization and inhibition of the action potential. Barbiturates act at a separate allosteric site and work by prolonging the duration of channel openings in response to GABA and, at higher doses, as $GABA_A$ receptor agonists.

(Choice A) $GABA_B$ receptors mediate their actions using G proteins. The skeletal muscle relaxant baclofen is an example of a drug that works as a $GABA_B$ receptor agonist. Benzodiazepines work at the $GABA_A$ receptor.

(Choice B) Benzodiazepines do not alter GABA metabolism. Certain anti-epileptic medications, including valproic acid and vigabatrin, function to reduce GABA catabolism.

(Choice D) Benzodiazepines do not function through direct activation of the $GABA_A$ receptor. Instead, they work as positive allosteric modulators that promote an increased frequency of channel openings in response to GABA stimulation.

(Choice E) Benzodiazepines do not function through blockage of the $GABA_A$ receptor lumen. Examples of drugs that directly block the lumen of ion channels include amiloride (which affects epithelial sodium channels in the distal portions of the nephron) and verapamil (a calcium channel blocker).

(Choice F) Prolonged benzodiazepine use has been shown to cause downregulation of GABA$_A$ receptors and

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different binding sites for GABA and various drugs (eg, benzodiazepines, barbiturates). **Benzodiazepines** act by binding to the benzodiazepine binding site, which **allosterically modulates** the **binding of GABA**, resulting in an **increased** frequency of **chloride ion channel opening**. The influx of chloride ions into the neurons causes neuronal hyperpolarization and inhibition of the action potential. Barbiturates act at a separate allosteric site and work by prolonging the duration of channel openings in response to GABA and, at higher doses, as $GABA_A$ receptor agonists.

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(Choice F) Prolonged benzodiazepine use has been shown to cause downregulation of $GABA_A$ receptors and may be one of the mechanisms by which benzodiazepine tolerance develops.

Educational objective:
Benzodiazepines act by binding to the benzodiazepine binding site, which allosterically modulates the binding of GABA, resulting in an increased frequency of chloride ion channel opening. The *influx of chloride ions* into the neurons causes neuronal hyperpolarization and inhibition of the action potential.

References

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A resident physician is finishing up her shift when she receives a page that reads, "Patient in Room 121 asking to leave." The patient was admitted 2 hours ago for worsening dyspnea. On entering the room, the resident attempts to engage in a discussion about why the patient is requesting to leave. In response, the patient pulls out his nasal cannula and breathlessly says, "You don't know anything; you're not even a real doctor!" The resident is reminded of her father, who has frequently belittled her accomplishments. She angrily informs the patient, "You can't leave and I'm ordering haloperidol to calm you down." Which of the following best explains the resident's response to the patient?

- A. Countertransference
- B. Passive aggression
- C. Projection
- D. Reaction formation
- E. Regression
- F. Transference

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- ✓ A. Countertransference (64%)
- ✗ B. Passive aggression (2%)
- C. Projection (10%)
- D. Reaction formation (3%)
- E. Regression (1%)
- F. Transference (17%)

Incorrect
Correct answer
A

64%
Answered correctly

04 secs
Time Spent

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Explanation

The resident's response to the patient is illustrative of **countertransference**, which consists of the physician or therapist's conscious and unconscious **reaction toward a patient** (eg, attitudes, thoughts, feelings, behaviors) that is **based on past personal relationships**. Countertransference reactions can be positive (eg, physician takes

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The resident's response to the patient is illustrative of **countertransference**, which consists of the physician or therapist's conscious and unconscious **reaction toward a patient** (eg, attitudes, thoughts, feelings, behaviors) that is **based on past personal relationships**. Countertransference reactions can be positive (eg, physician takes extra time with a patient who resembles a beloved grandmother) or negative (eg, physician avoids a patient who resembles a critical parent).

Countertransference can **interfere with medical judgment**. In this case, the resident's negative emotions toward her father are activated when the patient dismisses her training and credentials. The resident acts on her negative countertransference reaction and adopts an inappropriately authoritarian approach by terminating the conversation and ordering a medication. Awareness of countertransference may prevent responses and behaviors (eg, yelling at a patient, ordering unnecessary medications/restraints, cutting an interview short) that could be harmful to patient care.

(Choice B) Passive aggression is a defense mechanism in which anger is expressed in a nonconfrontational manner. Examples of passive aggressive behaviors include sarcasm, procrastination, and purposeful inefficiency.

(Choice C) Projection is a defense mechanism that involves misattributing one's own unacceptable feelings to another person (eg, a woman who is angry with her mother accuses her mother of being angry with her).

(Choice D) Reaction formation is a defense mechanism in which uncomfortable feelings are unconsciously transformed into their extreme opposites (eg, if this resident was excessively gracious to the patient to defend against underlying anger).

(Choice E) Regression is a defense mechanism that involves returning to an earlier level of functioning to alleviate psychological distress (eg, a child starts sucking his thumb after a sibling is born).

(Choice F) Transference refers to the redirection of a patient's emotions from a significant person in the past to that patient's current physician or therapist. It may explain some patients' emotional responses to their physicians (eg, an elderly patient who feels an immediate sense of comfort and familiarity with a physician who resembles her

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Educational objective:
Countertransference consists of a provider's response (eg, attitudes, thoughts, feelings, behaviors) toward a patient based on past personal relationships. Countertransference can be positive or negative, conscious or unconscious; if unrecognized, it may have detrimental effects on patient care.

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A 21-year-old woman, gravida 1 para 0, comes to the office for a prenatal visit at 16 weeks gestation. The patient, who has not gained weight since her last visit 4 weeks ago, has occasional nausea with vomiting twice a week. She has little appetite, which she attributes to mild indigestion, and her food consumption has decreased. However, the patient craves ice and has been consuming it throughout the day for the last few months. Medications include daily prenatal vitamins. The patient was prescribed twice-daily iron for anemia but does not take it because it causes constipation. She has no diarrhea, dysuria, chills, or fever. The patient does not use tobacco. The uterine fundus is consistent with a 16-week pregnancy. Fetal heart tone is 140-149/min. The patient's vital signs are within normal limits. Which of the following is the most likely diagnosis?

- A. Anorexia nervosa
- B. Avoidant/restrictive food intake disorder
- C. Bulimia nervosa
- D. Hyperemesis gravidarum
- E. Normal pregnancy craving
- F. Pica

Submit

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- A. Anorexia nervosa (2%)
- ✕ B. Avoidant/restrictive food intake disorder (8%)
- C. Bulimia nervosa (1%)
- D. Hyperemesis gravidarum (5%)
- E. Normal pregnancy craving (15%)
- ✓ F. Pica (66%)

Incorrect
Correct answer
F

66%
Answered correctly

04 secs
Time Spent

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Explanation

Pica is the compulsive **consumption of nonfood substances** for ≥1 month. The ingested substance usually has no caloric value (eg, ice), is not a culturally accepted food source, and its consumption is not appropriate to the

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Pica is the compulsive **consumption of nonfood substances** for ≥1 month. The ingested substance usually has no caloric value (eg, ice), is not a culturally accepted food source, and its consumption is not appropriate to the person's developmental level. Pica is often associated with **nutritional deficiencies**, such as iron and zinc deficiencies.

The 3 main types of materials consumed are **earth/soil**-rich substances, **raw starch** (eg, flour), and **ice**. Ice is the most common, but many people ingest more than one substance. Craving ice is particularly associated with **iron-deficiency anemia**, which is common in **pregnancy** due to increased iron requirements to supply the fetus, placenta, and expansion in maternal red blood cell mass.

(Choice A) Patients with anorexia nervosa restrict caloric intake to maintain a low body weight (typical BMI <18.5 kg/m^2). They may demonstrate decreased food consumption, like this patient, but they do not typically consume large quantities of ice. Anorexia nervosa should be suspected in pregnant patients with weight loss, low body weight, and distorted body image or intense fear of weight gain.

(Choice B) Avoidant/restrictive food intake disorder is the avoidance of eating due to unpleasant sensations (eg, taste, texture, smell) associated with a particular foodstuff or fear of the consequences of eating (eg, fear of choking or vomiting). Although this patient has reduced her food consumption due to indigestion, she does not fear or avoid particular foods.

(Choice C) Bulimia nervosa involves episodes of binge eating followed by behaviors to compensate for weight gain (eg, vomiting, fasting, diuretic and/or laxative use), which are not seen in this patient.

(Choice D) Hyperemesis gravidarum is severe nausea and vomiting in pregnancy that can lead to weight loss and electrolyte imbalances. In contrast, this patient's occasional nausea/vomiting (eg, twice weekly) is consistent with normal morning sickness.

(Choice E) Patients with normal pregnancy cravings typically desire nutritive (ie, calorie-containing) foods, particularly those with a sweet or salty taste (eg, ice cream, pickles).

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Educational objective:
Pica is the compulsive consumption of a nonfood substance. It is often associated with iron deficiency anemia, which is common during pregnancy, and other forms of nutritional deficiency (eg, zinc).

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A 72-year-old retired man with end-stage renal disease becomes agitated during dialysis and attempts to abruptly leave in the middle of the procedure. The patient accuses the staff of violating his rights and stealing his belongings but then appears to fall asleep. Fifteen minutes later, he becomes violent and requires restraints. Medical history is significant for hypertension, type 2 diabetes mellitus, hyperlipidemia, and peripheral vascular disease. The patient has a history of major depression that has been in remission for 15 years. His wife says that he has experienced mild memory and word-finding difficulties over the last year and that he often needs to make lists to remind himself of errands; however, she has never witnessed this type of agitated behavior. Temperature is 38.3 C (100.9 F), blood pressure is 112/63 mm Hg, pulse is 93/min, and respirations are 18/min. The patient has a left carotid bruit, and a dialysis catheter is present in the right internal jugular vein. Bronchial breath sounds are heard at the right lung base. During neurologic evaluation, he is confused but cooperative with no focal findings. Which of the following is the most likely explanation for this patient's current behavior?

- A. Alzheimer disease
- B. Brief psychotic disorder
- C. Delirium
- D. Depression with psychotic features
- E. Frontotemporal dementia
- F. Vascular dementia

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- A. Alzheimer disease (5%)
- ✗ B. Brief psychotic disorder (4%)
- ✓ C. Delirium (64%)
- D. Depression with psychotic features (2%)
- E. Frontotemporal dementia (10%)
- F. Vascular dementia (12%)

Incorrect
Correct answer
C

64%
Answered correctly

04 secs
Time Spent

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Explanation

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Clinical features of delirium, dementia & depression in older adult clients			
	Delirium	**Dementia**	**Depression**
Onset	Acute	Gradual (months to years)	Gradual (months)
Consciousness	Impaired	Intact	Intact
Course	Fluctuating	Progressive	Episodic
Prognosis	Reversible	Irreversible	Reversible
Memory impairment	Global impairment	Remote memory spared	Moderately impaired focus/concentration

This acute onset of mental status change is most suggestive of **delirium**. Delirium is a **reversible, acute confusional** state involving a reduced or **fluctuating level of consciousness** (eg, somnolent to combative within a short time); there are difficulties sustaining attention and significantly impaired memory and executive function. It is most commonly seen in elderly patients with medical illness and is often associated with anxiety, agitation, delusions, and/or hallucinations. Patients of advanced age and with neurologic conditions such as Parkinson disease, dementia, and prior stroke are more likely to develop delirium due to reduced cognitive reserve.

The presence of delirium in this patient indicates an unstable underlying medical condition that must be identified and treated. The patient's elevated temperature and bronchial breath sounds are likely due to an underlying pulmonary infection. Once the underlying medical condition is effectively treated, the delirium should resolve.

(Choices A, E, and F) In contrast to delirium, the dementia in Alzheimer disease, frontotemporal dementia, and vascular dementia is gradual in onset and progressive without much fluctuation. In Alzheimer disease, attention and remote memory are spared initially, and there is no impairment of consciousness until late in the disease. Frontotemporal dementia presents with early behavior change (eg, disinhibition, apathy), followed later by memory

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(Choice B) Brief psychotic disorder is characterized by the sudden onset of psychotic symptoms lasting ≥1 day but <1 month that is not better explained by another medical condition. In contrast to patients with delirium, those with psychotic disorders are typically alert and oriented.

(Choice D) Major depression can sometimes be accompanied by delusions or hallucinations (eg, voices telling patients they are worthless). The absence of current depressive symptoms, acute onset, and fluctuating level of consciousness make this diagnosis unlikely.

Educational objective:

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(Choices A, E, and F) In contrast to delirium, the dementia in Alzheimer disease, frontotemporal dementia, and vascular dementia is gradual in onset and progressive without much fluctuation. In Alzheimer disease, attention and remote memory are spared initially, and there is no impairment of consciousness until late in the disease. Frontotemporal dementia presents with early behavior change (eg, disinhibition, apathy), followed later by memory impairments. Vascular dementia involves a stepwise decline typically associated with focal neurologic signs and does not impair consciousness in the early stages. Although this patient's mild cognitive impairments over the past year may gradually progress to dementia, they would not explain his acute confusional state, which is a rapid change from his baseline.

(Choice B) Brief psychotic disorder is characterized by the sudden onset of psychotic symptoms lasting ≥1 day but <1 month that is not better explained by another medical condition. In contrast to patients with delirium, those with psychotic disorders are typically alert and oriented.

(Choice D) Major depression can sometimes be accompanied by delusions or hallucinations (eg, voices telling patients they are worthless). The absence of current depressive symptoms, acute onset, and fluctuating level of consciousness make this diagnosis unlikely.

Educational objective:
Delirium is a reversible, acute-onset confusional state characterized by a fluctuating level of consciousness with deficits in attention, memory, and executive function. In contrast, dementia has a gradual onset, is irreversible, and does not involve fluctuations in consciousness.

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Memory impairment	Global	Remote memory spared	Moderately impaired

Exhibit Display

Causes of delirium	
Predisposing risk factors	• Dementia • Parkinson disease • Prior stroke • Advanced age • Sensory impairment
Precipitating factors	• Drugs (eg, narcotics, sedatives, antihistamines, muscle relaxers, polypharmacy) • Infections (eg, pneumonia, urinary tract infection, meningitis) • Electrolyte disturbances (eg, hyponatremia, hypercalcemia) • Metabolic derangements (eg, volume depletion, vitamin B_{12} deficiency, hyperglycemia) • Systemic illnesses (eg, congestive heart failure, hepatic failure, malignancy) • CNS conditions (eg, seizure, stroke, head injury, subdural hematoma)

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A 34-year-old man is brought to the emergency department by his wife after she found him running around the yard in his underwear shouting, "I am going to change the world." She reports that he has a lot of energy despite hardly sleeping for the past 7 days, and that he recently quit his job to write a 500-page novel that he says "explains everything about the universe." The patient's history is significant for epilepsy with generalized seizures since childhood and a psychiatric hospitalization a year ago for a major depressive episode. Family history is significant for alcoholism and hypertension in his father and schizophrenia in his grandmother. Which of the following medications would be most helpful for long-term treatment of this patient's psychiatric condition as well as his seizure disorder?

- A. Aripiprazole
- B. Citalopram
- C. Levetiracetam
- D. Lithium
- E. Lorazepam
- F. Phenytoin
- G. Valproate

Submit

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A 34-year-old man is brought to the emergency department by his wife after she found him running around the yard in his underwear shouting, "I am going to change the world." She reports that he has a lot of energy despite hardly sleeping for the past 7 days, and that he recently quit his job to write a 500-page novel that he says "explains everything about the universe." The patient's history is significant for epilepsy with generalized seizures since childhood and a psychiatric hospitalization a year ago for a major depressive episode. Family history is significant for alcoholism and hypertension in his father and schizophrenia in his grandmother. Which of the following medications would be most helpful for long-term treatment of this patient's psychiatric condition as well as his seizure disorder?

- A. Aripiprazole (2%)
- ✗ B. Citalopram (1%)
- C. Levetiracetam (3%)
- D. Lithium (14%)
- E. Lorazepam (2%)
- F. Phenytoin (2%)
- ✓ G. Valproate (72%)

Incorrect
Correct answer
G

72%
Answered correctly

04 mins, 11 secs
Time Spent

2023
Version

Explanation

Mood stabilizers in bipolar disorder

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Mood stabilizers in bipolar disorder		
	Indications	**Adverse effects**
Lithium	• Manic & depressive features	• Diabetes insipidus • Hypothyroidism • Tremor • Ebstein anomaly (teratogenic)
Valproate	• Manic features	• Hepatotoxicity • Neural tube defects (teratogenic)
Carbamazepine	• Manic features	• Aplastic anemia • SIADH • Neural tube defects (teratogenic)
Lamotrigine	• Depressive features	• Benign rash • Stevens-Johnson syndrome
SIADH = syndrome of inappropriate antidiuretic hormone secretion.		

This patient's history of major depression along with his current manic symptoms (ie, decreased need for sleep, grandiosity, goal-directed activity) indicate a diagnosis of bipolar disorder. **Valproate** (valproic acid) is used as an **anticonvulsant** and **mood stabilizer**. It blocks voltage-gated sodium channels and enhances the availability of GABA. As a mood stabilizer, it is used in acute mania and maintenance treatment of **bipolar disorder**. As an anticonvulsant, it effectively treats absence, myoclonic, and **generalized tonic-clonic seizures**. It is the drug of choice for **myoclonic seizures** and a second-line agent for absence seizures (for which ethosuximide is preferred).

Other anticonvulsants used as mood stabilizers in bipolar disorder include carbamazepine and lamotrigine.

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Other anticonvulsants used as mood stabilizers in bipolar disorder include carbamazepine and lamotrigine. Carbamazepine is a CYP450 inducer that can cause lower levels of concomitant medications. Lamotrigine is associated with skin rash, which rarely can progress to life-threatening mucocutaneous reactions (eg, Stevens-Johnson syndrome).

(Choice A) Aripiprazole is a second-generation antipsychotic used to treat psychotic and mood disorders. Antipsychotics are not indicated for seizures and may lower the seizure threshold.

(Choice B) Citalopram is a selective serotonin reuptake inhibitor (SSRI) antidepressant. SSRI monotherapy is avoided in bipolar disorder due to the risk of inducing mania. SSRIs have no role in the treatment of seizures.

(Choices C and F) Levetiracetam and phenytoin are anticonvulsants used in the treatment of epilepsy but they are not useful for treating bipolar disorder.

(Choice D) Lithium is a mood stabilizer that is effective for the treatment of bipolar disorder. Lithium is thought to modify second messenger signal transduction (eg, adenylyl cyclase and phospho-inositol pathways) at several levels, resulting in decreased excitatory neurotransmission. Lithium is not an anticonvulsant.

(Choice E) Lorazepam is a benzodiazepine that enhances the affinity of GABA for its receptor (increases frequency of chloride channel openings), thereby increasing its inhibitory potential. Lorazepam is a first-line medication for the treatment of active seizures, acute anxiety, and alcohol withdrawal.

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GABA. As a mood stabilizer, it is used in acute mania and maintenance treatment of **bipolar disorder**. As an anticonvulsant, it effectively treats absence, myoclonic, and **generalized tonic-clonic seizures**. It is the drug of choice for **myoclonic seizures** and a second-line agent for absence seizures (for which ethosuximide is preferred).

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Educational objective:
Lithium and the anticonvulsants valproate, carbamazepine, and lamotrigine are mood-stabilizing agents used in bipolar disorder. Valproate is commonly used in the treatment of generalized as well as myoclonic seizures.

References

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A 34-year-old man comes to the emergency department for evaluation of abdominal pain. He reports severe pain unrelated to meals that is sharp, stabbing, and 10 out of 10 in severity. The patient has been hospitalized twice in the past year for similar symptoms and states that a diagnosis was never found. He declines when asked to sign a release of information to obtain his prior medical records. Vital signs are within normal limits. On physical examination, heart and lung sounds are normal. Abdomen is soft and nondistended with normoactive bowel sounds. The patient grimaces and moans in pain throughout the evaluation. Laboratory evaluation and abdominal CT scan show no abnormalities. After hearing the results, the patient asks for a note to excuse him from work so that he can recover at home for a few days. Which of the following additional features is most likely to be present in this patient?

- A. Chronic feelings of helplessness
- B. Excessive anxiety about unexplained physical symptoms
- C. Preoccupation with having a serious illness
- D. Recurrent suicidal gestures or attempts
- E. Refusal of invasive medical procedures

Submit

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- A. Chronic feelings of helplessness (3%)
- ✗ B. Excessive anxiety about unexplained physical symptoms (7%)
- C. Preoccupation with having a serious illness (12%)
- D. Recurrent suicidal gestures or attempts (2%)
- ✓ E. Refusal of invasive medical procedures (74%)

Incorrect
Correct answer
E

74%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

Malingering	
	• Falsification or exaggeration of symptoms to obtain external reward (eg,

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Malingering	
Key feature	• Falsification or exaggeration of symptoms to obtain external reward (eg, financial gain, avoidance of work or criminal prosecution)
Associated findings suggestive of malingering	• Discrepancy between subjective distress & objective findings • Symptoms present only while observed • Inconsistencies in history/reluctance to provide information • Nonadherence/refusal of invasive procedures • Antisocial personality disorder • Analgesic, sedative medication misuse/abuse

This patient's subjective report of severe pain and distress without objective findings (normal physical examination, repeated hospitalizations without diagnosis), refusal to provide release for prior medical records, and evidence of external gain (time off from work) are suggestive of **malingering**. Malingering is a behavior characterized by **intentional falsification** or exaggeration of symptoms to obtain an obvious **external reward** (eg, medications, financial gain, avoidance of work responsibilities or criminal prosecution). These patients often have a dramatic presentation based on subjective complaints rather than objective findings and may refuse to provide a release of information.

Malingering should be differentiated from factitious disorder, in which the patient intentionally falsifies symptoms with the goal of assuming the patient role, rather than obtaining an external reward. Patients with factitious disorder often welcome invasive diagnostic testing and surgical procedures. In contrast, patients who are malingering will often **refuse to undergo invasive medical procedures**.

(Choice A) Chronic feelings of helplessness are associated with depression and some personality disorders. Although patients with these disorders may also be preoccupied with somatic symptoms, they do not intentionally exaggerate or falsify their symptoms for an external gain like this patient.

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(Choice A) Chronic feelings of helplessness are associated with depression and some personality disorders. Although patients with these disorders may also be preoccupied with somatic symptoms, they do not intentionally exaggerate or falsify their symptoms for an external gain like this patient.

(Choice B) Excessive anxiety related to unexplained physical symptoms is characteristic of somatic symptom disorder. These patients do not intentionally falsify their symptoms; their presentation is genuine. In contrast, this patient is not excessively anxious and appears to be exaggerating his symptoms for an external gain.

(Choice C) Preoccupation with having a serious illness is a key feature of illness anxiety disorder. These patients fear having a serious diagnosis despite few or no symptoms. This patient has exaggerated symptoms and is focused on avoiding work responsibilities rather than fear that a serious medical condition has been missed.

(Choice D) Although malingering can be associated with conditional threats of self-harm, suicide, or violence (eg, a patient threatens to kill himself if demands are not met), recurrent suicidal behaviors (eg, gestures and attempts) are associated with borderline personality disorder and are often motivated by fears of abandonment.

Educational objective:

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financial gain, avoidance of work responsibilities or criminal prosecution). These patients often have a dramatic presentation based on subjective complaints rather than objective findings and may refuse to provide a release of information.

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Educational objective:
Malingering is a behavior characterized by intentional falsification or exaggeration of symptoms to obtain an obvious external reward. The presentation is typically based on a subjective report of symptoms, and these patients commonly refuse to undergo invasive medical procedures.

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A 22-year-old college student seeks treatment for depressed mood, low energy, poor concentration, and feelings of worthlessness and guilt following a breakup with her partner of 2 years. She is diagnosed with major depression and treated with bupropion and psychotherapy. After 3 weeks of treatment, the patient reports that her energy and motivation have improved somewhat. Her grades, which had been deteriorating, have stabilized. The patient is also continuing to receive psychotherapy and believes that it is beneficial. However, she still feels "really down" at times and has a poor appetite. Further history suggests that the patient consumes very little food each day (a pattern that preceded her use of bupropion) and exercises excessively. Due to her ongoing mood problems, increasing the dose of her antidepressant medication is considered. Which of the following potential side effects of the increased dose would be of primary concern?

- A. Agranulocytosis
- B. Hypertension
- C. Seizures
- D. Sexual dysfunction
- E. Stevens-Johnson syndrome
- F. Weight gain

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- A. Agranulocytosis (2%)
- ✗ B. Hypertension (4%)
- ✓ C. Seizures (75%)
- D. Sexual dysfunction (6%)
- E. Stevens-Johnson syndrome (1%)
- F. Weight gain (8%)

Incorrect
Correct answer
C

75%
Answered correctly

59 secs
Time Spent

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Explanation

Bupropion is an antidepressant that works by inhibiting the reuptake of norepinephrine and dopamine. It is

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Bupropion is an antidepressant that works by inhibiting the reuptake of norepinephrine and dopamine. It is commonly used to treat major depression and is often preferred by patients because it does not cause weight gain or sexual side effects.

Seizures are a potential side effect of bupropion therapy, especially when the medication is given at high doses. The risk is even greater in patients with pre-existing seizure disorders or eating disorders with potential electrolyte imbalances. Bupropion is therefore **contraindicated** in patients with **seizure disorders** or current or prior diagnosis of **bulimia** or **anorexia nervosa**. This patient's possible food restriction and excessive exercise suggest the possibility of an eating disorder, and the increased seizure risk with a higher dosage of bupropion would be of primary concern.

(Choice A) Agranulocytosis is a side effect related to treatment with the antipsychotic clozapine. The mood-stabilizing agents carbamazepine and valproate can also be associated with bone marrow abnormalities.

(Choice B) Bupropion has minimal effects on blood pressure. The serotonin-norepinephrine reuptake inhibitor venlafaxine has been associated with increased blood pressure, especially at higher doses.

(Choice D) Sexual dysfunction is a relatively common side effect of selective serotonin reuptake inhibitors (SSRIs), which limits their use for many patients. Bupropion has no effect on serotonin and does not cause sexual dysfunction. It can be used as an adjunct to treat SSRI-related sexual dysfunction.

(Choice E) Rash, including life-threatening Stevens-Johnson syndrome, rarely occurs with bupropion. It is more commonly seen with the anticonvulsant lamotrigine, which is used to treat bipolar depression.

(Choice F) Bupropion is either weight neutral or associated with mild weight loss.

Educational objective:
Bupropion is a first-line antidepressant that is not associated with sexual side effects or weight gain. However, it is associated with an increased seizure risk at high doses and is contraindicated in patients with seizure disorders, anorexia nervosa, and bulimia.

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A 62-year-old woman comes to the office for a checkup. Her husband died 5 months ago in a biking accident, which she witnessed. She has little appetite, resulting in weight loss of 3.17 kg (7 lb), and tends to wake up two hours before her alarm clock rings. The patient feels overwhelmed at having to manage the household finances, saying, "My husband always took care of the bills so I wouldn't have to worry." She avoids cycling, a hobby she shared with her husband, but continues to volunteer at a children's hospital. The patient has no nightmares or suicidal thoughts. During the visit, she tears up intermittently but smiles when sharing a memory of a vacation she took with her husband. Which of the following is the best explanation for this patient's condition?

- A. Dependent personality disorder
- B. Major depressive disorder
- C. Normal grief
- D. Persistent complex bereavement disorder
- E. Persistent depressive disorder
- F. Post-traumatic stress disorder

Submit

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- A. Dependent personality disorder (0%)
- ✗ B. Major depressive disorder (2%)
- ✓ C. Normal grief (89%)
- D. Persistent complex bereavement disorder (3%)
- E. Persistent depressive disorder (0%)
- F. Post-traumatic stress disorder (2%)

Incorrect
Correct answer
C

89%
Answered correctly

06 secs
Time Spent

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Version

Explanation

Major depressive episode & grief reaction	
Major depressive episode	**Grief reaction**

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Major depressive episode & grief reaction	
Major depressive episode	**Grief reaction**
• ≥2 weeks; ≥5 of 9 symptoms: low mood, anhedonia, sleep disturbance, appetite change, low energy, psychomotor changes, guilt/worthlessness, concentration difficulty, suicidal ideation • May occur in response to a variety of stressors, including loss of a loved one • Marked social & occupational dysfunction • Suicidality related to hopelessness & worthlessness	• Normal reaction to loss (bereavement) • Sadness more specific to thoughts of the deceased • "Waves" of grief at reminders • Self-esteem usually preserved • Functional decline less severe • Thoughts of dying involve wish to join the deceased; active suicidality uncommon • Intensity decreases over time

This patient's sadness, insomnia, and decreased appetite are consistent with a **normal grief reaction** precipitated by the loss of a loved one (bereavement). In a normal grief reaction, the sadness revolves around **feelings of loss** and typically occurs in "waves" **intermixed** with **positive memories** of the deceased. For most, the natural mourning process lasts 6-12 months and is followed by the integration of grief, in which the individual continues to feel transient but less pronounced sadness, and life plans/routines have adapted to living without the deceased.

Normal grief can **resemble** a **major depressive episode** as both may include intense sadness, rumination about the loss, insomnia, poor appetite, and weight loss. However, this woman's positive memories about her husband, ability to continue volunteering, and lack of other depressive symptoms (eg, hopelessness, feelings of low self-worth, guilt, suicidal ideation) make major depression less likely **(Choice B)**. A major depressive disorder can be diagnosed during a grief reaction if a sufficient number and severity of depressive symptoms are present.

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This patient's sadness, insomnia, and decreased appetite are consistent with a **normal grief reaction** precipitated by the loss of a loved one (bereavement). In a normal grief reaction, the sadness revolves around **feelings of loss** and typically occurs in "waves" **intermixed** with **positive memories** of the deceased. For most, the natural mourning process lasts 6-12 months and is followed by the integration of grief, in which the individual continues to feel transient but less pronounced sadness, and life plans/routines have adapted to living without the deceased.

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(Choice A) Dependent personality disorder is diagnosed when there is a lifelong pattern of excessive need to be taken care of, leading to submissive, clingy behavior and fears of separation.

(Choice D) Persistent complex bereavement disorder (also known as complicated grief) is characterized by prolonged grief for >12 months, difficulty accepting the death, persistent yearning for the deceased, and inability to reengage with life. This patient's symptom duration is within the range seen in normal grief and she is showing signs of adapting to living without the deceased.

(Choice E) Persistent depressive disorder is a chronic depression that persists for at least 2 years.

(Choice F) Although this patient witnessed her husband's accident and avoids cycling, her symptoms are not consistent with post-traumatic stress disorder as she is not re-experiencing the event (eg, nightmares, flashbacks) or having symptoms of trauma-related reactivity (eg, hypervigilance, heightened startle response).

Educational objective:
Normal grief presents with symptoms similar to those of a major depressive episode. However, in normal grief, pervasive anhedonia, worthlessness, and suicidality are not present.

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A 31-year-old man is brought to the emergency department by the police after he assaulted a stranger who he thought was following him. The police report indicates that when the patient was arrested, he was shouting, "You don't understand, I'm the one who needs protection—the Russians are after my secrets!" In the emergency department, the patient is diaphoretic and tremulous. He is very easily distracted and cannot give a clear history. Temperature is 37 C (98.6 F), blood pressure is 164/102 mm Hg, and pulse is 112/min with a normal rhythm. Extraocular movements are intact, and the pupils are dilated. His speech is loud, rapid, and difficult to interrupt. Which of the following is the most likely diagnosis?

- A. Anticholinergic toxicity
- B. Bipolar disorder, manic episode
- C. Cocaine intoxication
- D. Delusional disorder, persecutory type
- E. Opioid withdrawal
- F. Phencyclidine intoxication
- G. Schizophreniform disorder

Submit

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- A. Anticholinergic toxicity (2%)
- ✗ B. Bipolar disorder, manic episode (4%)
- ✓ C. Cocaine intoxication (51%)
- D. Delusional disorder, persecutory type (7%)
- E. Opioid withdrawal (6%)
- F. Phencyclidine intoxication (23%)
- G. Schizophreniform disorder (2%)

Incorrect
Correct answer
C

51%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

This patient's **psychotic symptoms** (eg, delusions, paranoia), pressured speech, and signs of **sympathetic stimulation** (eg, diaphoresis, tremulousness, tachycardia, hypertension, mydriasis) are most consistent with

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This patient's **psychotic symptoms** (eg, delusions, paranoia), pressured speech, and signs of **sympathetic stimulation** (eg, diaphoresis, tremulousness, tachycardia, hypertension, mydriasis) are most consistent with **cocaine intoxication**. In high doses, cocaine and other stimulants (eg, methamphetamine) may cause **paranoid delusions** that are often indistinguishable from those found in primary psychotic disorders (eg, schizophrenia). Auditory, visual, or tactile hallucinations (eg, insects crawling under the skin) may also occur. Patients under the influence of stimulants frequently exhibit euphoria, hyperactivity, agitation, and grandiosity that may resemble an acute manic episode.

(Choice A) Anticholinergic toxicity may cause tachycardia, hypertension, mydriasis, and psychosis. However, anticholinergic toxicity is characterized by both dry skin and mucous membranes rather than diaphoresis and presents with other classic anticholinergic effects (eg, urinary retention, decreased bowel sounds, hyperthermia).

(Choice B) Dilated pupils, diaphoresis, and tremors are not expected in a primary manic episode of bipolar disorder. A diagnosis of bipolar disorder cannot be made if there is evidence that symptoms can be attributed to the physiological effects of a substance (eg, cocaine).

(Choices D and G) Delusional disorder is characterized by ≥1 delusions lasting for ≥1 month that are not accompanied by other psychotic symptoms. Schizophreniform disorder may be diagnosed in patients who meet symptomatic criteria for schizophrenia for >1 month and <6 months. Neither diagnosis explains this patient's physical findings.

(Choice E) Opioid withdrawal presents with gastrointestinal distress (eg, nausea, diarrhea, abdominal cramping), myalgias, mydriasis, piloerection, and lacrimation. Psychotic features are not seen.

(Choice F) Phencyclidine (ie, PCP) intoxication may cause psychotic symptoms and violent behavior. It typically presents with prominent nystagmus, a finding notably absent in this patient.

Educational objective:
Cocaine intoxication can produce psychotic symptoms (eg, paranoid delusions), euphoria, and agitation. Physical

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cocaine intoxication. In high doses, cocaine and other stimulants (eg, methamphetamine) may cause **paranoid delusions** that are often indistinguishable from those found in primary psychotic disorders (eg, schizophrenia). Auditory, visual, or tactile hallucinations (eg, insects crawling under the skin) may also occur. Patients under the influence of stimulants frequently exhibit euphoria, hyperactivity, agitation, and grandiosity that may resemble an acute manic episode.

(Choice A) Anticholinergic toxicity may cause tachycardia, hypertension, mydriasis, and psychosis. However, anticholinergic toxicity is characterized by both dry skin and mucous membranes rather than diaphoresis and presents with other classic anticholinergic effects (eg, urinary retention, decreased bowel sounds, hyperthermia).

(Choice B) Dilated pupils, diaphoresis, and tremors are not expected in a primary manic episode of bipolar disorder. A diagnosis of bipolar disorder cannot be made if there is evidence that symptoms can be attributed to the physiological effects of a substance (eg, cocaine).

(Choices D and G) Delusional disorder is characterized by ≥1 delusions lasting for ≥1 month that are not accompanied by other psychotic symptoms. Schizophreniform disorder may be diagnosed in patients who meet symptomatic criteria for schizophrenia for >1 month and <6 months. Neither diagnosis explains this patient's physical findings.

(Choice E) Opioid withdrawal presents with gastrointestinal distress (eg, nausea, diarrhea, abdominal cramping), myalgias, mydriasis, piloerection, and lacrimation. Psychotic features are not seen.

(Choice F) Phencyclidine (ie, PCP) intoxication may cause psychotic symptoms and violent behavior. It typically presents with prominent nystagmus, a finding notably absent in this patient.

Educational objective:
Cocaine intoxication can produce psychotic symptoms (eg, paranoid delusions), euphoria, and agitation. Physical signs indicating sympathetic stimulation (eg, tachycardia, diaphoresis, mydriasis) can assist in differentiating cocaine intoxication from primary psychiatric disorders.

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cocaine intoxication. In high doses, cocaine and other stimulants (eg, methamphetamine) may cause **paranoid**

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cocaine intoxication from primary psychiatric disorders.

Exhibit Display

Schizophrenia	
Diagnosis	• ≥2 of the following (at least 1 symptom from 1-3) 1. Delusions 2. Hallucinations 3. Disorganized speech 4. Disorganized or catatonic behavior 5. Negative symptoms (eg, apathy, flat affect) • Continuous impairment ≥6 months • Significant functional decline
Treatment	• Antipsychotic medication • Adjunctive psychosocial interventions (eg, social skills training, cognitive-behavioral therapy, family intervention)

New | Existing | My Notebook

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A 32-year-old man comes to the office due to disabling anxiety. The patient was recently promoted to his company's headquarters, requiring him to work on the 48th floor of the building. As soon as he steps on the elevator, he feels panicky and faint, sweats profusely, and has heart palpitations. The patient is worried that he might have to resign if he is unable to control his anxiety. His fear of elevators dates back to childhood. He drinks 1 or 2 beers on weekends but does not use tobacco or illicit drugs. Which of the following is the most effective long-term treatment for this patient's condition?

- A. Alprazolam
- B. Cognitive-behavioral therapy
- C. Escitalopram
- D. Propranolol
- E. Psychodynamic psychotherapy
- F. Supportive psychotherapy
- G. Venlafaxine

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- A. Alprazolam (1%)
- ✓ B. Cognitive-behavioral therapy (72%)
- ✗ C. Escitalopram (6%)
- D. Propranolol (2%)
- E. Psychodynamic psychotherapy (8%)
- F. Supportive psychotherapy (3%)
- G. Venlafaxine (4%)

Incorrect
Correct answer
B

72%
Answered correctly

05 secs
Time Spent

2023
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Explanation

Specific phobia	
	• Marked anxiety about a **specific** object or situation (the phobic stimulus) for >6

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Specific phobia	
History & clinical features	• Marked anxiety about a **specific** object or situation (the phobic stimulus) for >6 months • Common types: fear of flying, heights, animals, injections, blood • Avoidance behavior (eg, avoiding bridges & elevators, refusing work requiring travel) • Common (10% of population) • Usually develops in childhood, often after traumatic event
Treatment	• Cognitive-behavioral therapy with exposure (first-line) • Short-acting benzodiazepines (limited role, may help acutely if therapist unavailable or insufficient time)

This patient's marked and immediate fear in a **specific situation** (ie, elevator as phobic stimulus) is consistent with a **specific phobia**. Although he feels panicky when confronted with the phobic stimulus, he does not have unexpected panic attacks as in panic disorder.

Cognitive-behavioral therapy, involving systematic, **repeated exposure** to the phobic stimulus, is the treatment of choice for specific phobia. Exposure is typically performed in a gradual, **step-wise manner**, resulting in decreased anxiety over time as habituation and extinction occur. Confrontation with the phobic stimulus in a safe and controlled manner can be accomplished through in vivo (most effective), imaginal, and virtual reality exposure techniques.

(Choice A) Benzodiazepines (eg, alprazolam) can be used in the acute treatment of specific phobia when there is lack of time, no available therapist, or infrequent encounters. It could be considered in the short-term treatment of this patient's anxiety while cognitive-behavioral therapy takes effect. Benzodiazepines, however, carry the risks of dependence, rebound anxiety, and cognitive impairment and would not be the appropriate long-term choice for this

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(Choices C and G) Escitalopram (a selective serotonin reuptake inhibitor), and venlafaxine (a serotonin-norepinephrine reuptake inhibitor) are used to treat depression in addition to panic disorder, generalized anxiety disorder, and social anxiety disorder. They are not first-line treatments for specific phobia.

(Choice D) The beta blocker propranolol has been used to treat performance anxiety (a subtype of social anxiety disorder) but is not useful for specific phobia.

(Choices E and F) These forms of psychotherapy would not address this patient's specific phobia directly. Psychodynamic psychotherapy focuses on developing insight into unresolved conflicts and the influence of past relationships on current life situations. Supportive psychotherapy is aimed at bolstering adaptive psychological defenses to help individuals cope with acute crises or chronic psychiatric illness.

Educational objective:

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unexpected panic attacks as in panic disorder.

Cognitive-behavioral therapy, involving systematic, **repeated exposure** to the phobic stimulus, is the treatment of choice for specific phobia. Exposure is typically performed in a gradual, **step-wise manner**, resulting in decreased anxiety over time as habituation and extinction occur. Confrontation with the phobic stimulus in a safe and controlled manner can be accomplished through in vivo (most effective), imaginal, and virtual reality exposure techniques.

(Choice A) Benzodiazepines (eg, alprazolam) can be used in the acute treatment of specific phobia when there is lack of time, no available therapist, or infrequent encounters. It could be considered in the short-term treatment of this patient's anxiety while cognitive-behavioral therapy takes effect. Benzodiazepines, however, carry the risks of dependence, rebound anxiety, and cognitive impairment and would not be the appropriate long-term choice for this patient who must encounter the phobic stimulus at work on a daily basis.

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Educational objective:
Exposure-based cognitive-behavioral therapy, in which patients are systematically confronted with their feared objects or situations, is the most effective long-term treatment for specific phobia.

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A 20-year-old college student comes to the office due to persistent fatigue, irregular menstrual periods, and difficulty losing weight despite intensive exercise. Several times a week, the patient has episodes where she uncontrollably consumes large amounts of cookies, bread, and potato chips. She feels disgusted with herself afterward and subsequently does additional exercise. Although the patient hates her appearance and constantly compares herself to her slimmer friends, she denies feeling persistently depressed. She has no other medical problems. Weight is 70 kg (154.3 lb) and height is 160 cm (5 ft 3 in). Blood pressure is 100/60 mm Hg and pulse is 92/min. Examination shows pharyngeal erythema and minimal parotid enlargement bilaterally. Potassium level is 3.4 mEq/L and amylase is 140 U/L. Pregnancy test is negative. Which of the following medications would be most effective in treating this patient?

- A. Bupropion
- B. Desipramine
- C. Fluoxetine
- D. Lisdexamfetamine
- E. No pharmacological treatment is effective
- F. Olanzapine

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A 20-year-old college student comes to the office due to persistent fatigue, irregular menstrual periods, and difficulty losing weight despite intensive exercise. Several times a week, the patient has episodes where she uncontrollably consumes large amounts of cookies, bread, and potato chips. She feels disgusted with herself afterward and subsequently does additional exercise. Although the patient hates her appearance and constantly compares herself to her slimmer friends, she denies feeling persistently depressed. She has no other medical problems. Weight is 70 kg (154.3 lb) and height is 160 cm (5 ft 3 in). Blood pressure is 100/60 mm Hg and pulse is 92/min. Examination shows pharyngeal erythema and minimal parotid enlargement bilaterally. Potassium level is 3.4 mEq/L and amylase is 140 U/L. Pregnancy test is negative. Which of the following medications would be most effective in treating this patient?

- A. Bupropion (8%)
- ✗ B. Desipramine (1%)
- ✓ C. Fluoxetine (66%)
- D. Lisdexamfetamine (5%)
- E. No pharmacological treatment is effective (14%)
- F. Olanzapine (2%)

Incorrect
Correct answer
C

66%
Answered correctly

01 min, 24 secs
Time Spent

2023
Version

Explanation

Eating disorders

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Eating disorders		
Diagnosis	**Clinical features**	**Treatment**
Anorexia nervosa	• **BMI <18.5 kg/m^2** • Intense fear of weight gain • Distorted views of body weight & shape	• Cognitive-behavioral therapy • Nutritional rehabilitation • **Olanzapine** if no response to above
Bulimia nervosa	• Recurrent episodes of binge eating • Binge eating & **inappropriate compensatory behavior** to prevent weight gain • Excess worrying about body shape & weight	• Cognitive-behavioral therapy • Nutritional rehabilitation • **SSRI (fluoxetine)**, often in combination with above
Binge-eating disorder	• Recurrent episodes of binge eating • **No inappropriate compensatory behaviors** • Lack of control during eating	• Cognitive-behavioral therapy • Behavioral weight loss therapy • SSRI • Lisdexamfetamine
SSRI = selective serotonin reuptake inhibitor.		

This patient's history of recurrent binge eating followed by compensatory exercise—accompanied by physical findings and laboratory values suggestive of self-induced vomiting (pharyngeal erythema, parotid enlargement, hypokalemia and hyperamylasemia)—is consistent with **bulimia nervosa**. Other findings seen in bulimia include hypotension, tachycardia, dry skin, menstrual irregularities, erosion of dental enamel, and metabolic alkalosis.

Treatment options for bulimia nervosa include nutritional rehabilitation (establishing a structured and consistent meal pattern), cognitive-behavioral therapy, and pharmacotherapy with selective serotonin reuptake inhibitors (SSRIs). **Fluoxetine** is considered the **drug of choice** and has the best evidence of being most effective in

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	• Lack of control during eating	• Lisdexamfetamine
SSRI = selective serotonin reuptake inhibitor.		

This patient's history of recurrent binge eating followed by compensatory exercise—accompanied by physical findings and laboratory values suggestive of self-induced vomiting (pharyngeal erythema, parotid enlargement, hypokalemia and hyperamylasemia)—is consistent with **bulimia nervosa**. Other findings seen in bulimia include hypotension, tachycardia, dry skin, menstrual irregularities, erosion of dental enamel, and metabolic alkalosis.

Treatment options for bulimia nervosa include nutritional rehabilitation (establishing a structured and consistent meal pattern), cognitive-behavioral therapy, and pharmacotherapy with selective serotonin reuptake inhibitors (SSRIs). **Fluoxetine** is considered the **drug of choice** and has the best evidence of being most effective in combination with nutritional rehabilitation and psychotherapy.

(Choice A) The antidepressant bupropion is a norepinephrine dopamine reuptake inhibitor that is contraindicated in bulimia nervosa due to elevated risk of seizures.

(Choice B) Tricyclic antidepressants such as desipramine are not first-line treatment for bulimia nervosa.

(Choice D) The amphetamine lisdexamfetamine has been used to treat binge eating disorder, but not bulimia nervosa.

(Choice E) Multiple studies support the efficacy of the SSRI fluoxetine in the treatment of bulimia nervosa.

(Choice F) Olanzapine, an antipsychotic associated with weight gain, has been used in patients with anorexia nervosa who fail to gain weight with psychotherapy alone. It has no role in the treatment of bulimia nervosa.

Educational objective

Treatment options for bulimia nervosa include nutritional rehabilitation, cognitive-behavioral therapy, and pharmacotherapy with selective serotonin reuptake inhibitors. Fluoxetine is the drug of choice.

References

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A 40-year-old woman is brought to the emergency department due to ataxia and tremor. The patient's symptoms started gradually 2 weeks ago and have worsened acutely over the past 2 days. She is having difficulty walking and almost fell while getting up from a chair. The patient's medical problems include bipolar disorder and recently diagnosed hypertension. Her medications include a stable dose of lithium for many years and a new blood pressure medication that was started several weeks ago. Vital signs are within normal limits. Neurologic examination reveals a resting tremor and difficulty with balance. Physical examination is otherwise normal. A drug interaction involving which of the following medications is most likely causing this patient's condition?

- A. Amiloride
- B. Clonidine
- C. Hydralazine
- D. Hydrochlorothiazide
- E. Metoprolol

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A 40-year-old woman is brought to the emergency department due to ataxia and tremor. The patient's symptoms started gradually 2 weeks ago and have worsened acutely over the past 2 days. She is having difficulty walking and almost fell while getting up from a chair. The patient's medical problems include bipolar disorder and recently diagnosed hypertension. Her medications include a stable dose of lithium for many years and a new blood pressure medication that was started several weeks ago. Vital signs are within normal limits. Neurologic examination reveals a resting tremor and difficulty with balance. Physical examination is otherwise normal. A drug interaction involving which of the following medications is most likely causing this patient's condition?

- A. Amiloride (9%)
- ✗ B. Clonidine (11%)
- C. Hydralazine (6%)
- ✓ D. Hydrochlorothiazide (68%)
- E. Metoprolol (4%)

Incorrect
Correct answer
D

68%
Answered correctly

04 secs
Time Spent

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Explanation

Lithium toxicity	
	Acute toxicity • Intentional overdose Chronic toxicity

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Lithium toxicity	

Etiology	Acute toxicity
	• Intentional overdose
	Chronic toxicity
	• Decreased renal perfusion (↓ lithium clearance)
	  ◦ Dehydration
	  ◦ Thiazide diuretics, NSAIDs, ACE inhibitors

Clinical features	Acute toxicity • Gastrointestinal: nausea, vomiting, diarrhea • Late neurologic sequelae Chronic toxicity (neurologic) • Lethargy, confusion, agitation • Ataxia, tremor/fasciculations, seizure
Treatment	• Intravenous hydration • Hemodialysis (severe cases)
NSAID = nonsteroidal anti-inflammatory drug.	

Lithium has a very **narrow therapeutic index**. Patients with acute toxicity initially develop symptoms of gastrointestinal upset (eg, vomiting, diarrhea) with later development of neurologic findings (eg, neuromuscular excitability, delirium) as the drug penetrates the central nervous system. However, **chronic lithium toxicity** generally presents with **gradual onset of neurologic symptoms**, such as this patient's worsening **ataxia** and **tremor**.

Lithium is similar to sodium in its properties and is almost exclusively excreted by the kidneys. Like sodium, it is filtered and reabsorbed mostly in the proximal tubules (>60%). Any cause of decreased glomerular filtration (eg

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Lithium is similar to sodium in its properties and is almost exclusively excreted by the kidneys. Like sodium, it is filtered and reabsorbed mostly in the proximal tubules (>60%). Any cause of decreased glomerular filtration (eg, volume depletion, congestive heart failure, cirrhosis) can increase proximal sodium/lithium reabsorption and lead to increased lithium retention.

Thiazide diuretics limit sodium reabsorption in the distal tubule, causing mild volume depletion (and potential hyponatremia) that stimulates proximal tubular sodium/lithium reabsorption, leading to lithium toxicity over time. ACE inhibitors and nonsteroidal anti-inflammatory drugs (NSAIDs) can also impair lithium clearance and lead to toxicity.

(Choice A) Amiloride is a potassium-sparing diuretic that works primarily on the distal tubule and collecting duct by inhibiting sodium reabsorption. Potassium-sparing diuretics often decrease serum lithium levels.

(Choices B, C, and E) Clonidine, hydralazine, and metoprolol do not alter renal ion exchange or cause volume depletion and therefore do not cause lithium toxicity.

Educational objective:
Chronic lithium toxicity (eg, confusion, ataxia, neuromuscular excitability) can be precipitated by volume depletion and drug interactions with thiazide diuretics, ACE inhibitors, and nonsteroidal anti-inflammatory drugs.

References

- Drug interactions with lithium: an update

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A 27-year-old man is brought to a family therapist by his wife following a violent outburst in which he nearly injured her. They were having what seemed like a minor argument over a miscommunication about her being late when he suddenly flew into a rage, started shouting, and threw several plates against the wall. His wife is now threatening to leave him because similar episodes keep happening despite his promise to control his anger. The patient is remorseful and says, "I have been getting into trouble because of my temper since high school. Once I get angry, I feel out of control and it's impossible to stop." The patient has no medical history. He drinks beer and uses cannabis to relax approximately 2-3 times a month. Which of the following is the most likely diagnosis in this patient?

- A. Antisocial personality disorder
- B. Bipolar disorder, manic episode
- C. Borderline personality disorder
- D. Conduct disorder
- E. Disruptive mood dysregulation disorder
- F. Intermittent explosive disorder
- G. Phencyclidine intoxication

Submit

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- A. Antisocial personality disorder (6%)
- B. Bipolar disorder, manic episode (2%)
- ✗ C. Borderline personality disorder (7%)
- D. Conduct disorder (5%)
- E. Disruptive mood dysregulation disorder (24%)
- ✓ F. Intermittent explosive disorder (52%)
- G. Phencyclidine intoxication (1%)

Incorrect
Correct answer
F

52%
Answered correctly

03 secs
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Explanation

This patient's repetitive outbursts of impulsive aggression that are grossly disproportionate to the situation is

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This patient's repetitive outbursts of impulsive aggression that are grossly disproportionate to the situation is suggestive of **intermittent explosive disorder** (IED), an impulse control disorder. Patients with IED often feel a sense of heighted arousal or tension that quickly escalates to rage and **uncontrollable impulses** to be **verbally** or **physically aggressive**. Outbursts may provide an immediate sense of relief that is usually followed by remorse. Patients can be assaultive and destroy property, resulting in significant functional impairment due to interpersonal difficulties, school suspension, job loss, and legal problems.

IED is not diagnosed if the violent behavior is premeditated or better explained as a manifestation of another disorder, such as a manic episode of bipolar disorder or substance intoxication. Treatment consists of cognitive-behavioral therapy and pharmacotherapy with selective serotonin reuptake inhibitors.

(Choices A and D) Aggressive behavior is common in antisocial personality disorder and conduct disorder, but it is often premeditated with the goal of intimidating others. This patient's behavior is not premeditated, and he does not show other antisocial features such as lawbreaking, lying, chronic irresponsibility, and lack of remorse. Conduct disorder is diagnosed in children, whereas antisocial personality disorder is diagnosed in patients age ≥18.

(Choice B) Patients with acute mania can be verbally or physically aggressive. However, this patient does not show other features of mania necessary for this diagnosis (ie, euphoric mood, increased energy and goal-directed activity, decreased need for sleep, pressured speech, grandiosity).

(Choice C) Patients with borderline personality disorder may become enraged in response to interpersonal conflicts but are not typically aggressive physically. This patient lacks other characteristic borderline features (eg, suicidal behavior, feelings of emptiness, fears of abandonment).

(Choice E) Patients with disruptive mood dysregulation disorder may also present with frequent verbal or physical outbursts. However, this is a childhood diagnosis that requires an onset age <10 and persistent irritability or anger between episodes.

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(Choice E) Patients with disruptive mood dysregulation disorder may also present with frequent verbal or physical outbursts. However, this is a childhood diagnosis that requires an onset age <10 and persistent irritability or anger between episodes.

(Choice G) Phencyclidine intoxication can present with violent behavior and is typically associated with nystagmus. It is unlikely to explain his pattern of impulsive, angry outbursts since high school.

Educational objective:
Intermittent explosive disorder is characterized by recurrent episodes of explosive verbal or physical aggression. The aggressive behaviors are impulsive and grossly out of proportion to the provocation.

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A 65-year-old man is brought to the emergency department with new-onset confusion, suprapubic discomfort, and lack of urine output. His past medical history is significant for benign prostatic hyperplasia, hypertension, hyperlipidemia, and type 2 diabetes mellitus complicated by neuropathy. The patient also has a history of chronic insomnia and has been treated with several medications with little benefit. He does not know his current medications. On examination, the patient is afebrile, confused, and oriented only to self. Suprapubic fullness is present, but abdominal examination is otherwise unremarkable. A urinary catheter is placed and immediately drains 1000 mL of urine. Which of the following medications most likely has contributed to this patient's current condition?

- A. Amitriptyline
- B. Atorvastatin
- C. Duloxetine
- D. Finasteride
- E. Gabapentin
- F. Metformin
- G. Tamsulosin

Submit

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- ✓ A. Amitriptyline (57%)
- ✗ B. Atorvastatin (1%)
- C. Duloxetine (8%)
- D. Finasteride (6%)
- E. Gabapentin (10%)
- F. Metformin (2%)
- G. Tamsulosin (14%)

Incorrect
Correct answer
A

57%
Answered correctly

03 secs
Time Spent

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Explanation

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Tricyclic antidepressants	
Tricyclic action	**Corresponding adverse effects**
Inhibition of presynaptic neurotransmitter reuptake (norepinephrine & serotonin)	• Tremor • Insomnia
Blockade of cardiac fast sodium channels	• Conduction defects • Arrhythmias • Hypotension
Antagonism of central & peripheral muscarinic acetylcholine receptors	• Confusion • Dry mouth • Constipation, intestinal ileus • Hyperthermia, flushing • Urinary retention
Antagonism of peripheral α-1 adrenergic receptors	• Orthostatic hypotension, falls
Antagonism of histamine (H1) receptors	• Sedation

Tricyclic antidepressants (TCAs), such as amitriptyline, are occasionally used for insomnia or adjunctive pain management when other medications are not effective. However, TCAs have strong **anticholinergic** properties that can lead to significant adverse effects such as **confusion**, constipation, and acute **urinary retention**. Elderly patients are at increased risk for side effects due to comorbid conditions (eg, dementia, benign prostatic hyperplasia), decreased hepatic and renal clearance of medications, and a higher burden of concurrent

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adrenergic receptors	
Antagonism of histamine (H1) receptors	• Sedation

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(Choices B and F) Metformin can cause lactic acidosis, and atorvastatin can cause hepatitis and myositis. These drugs do not have significant anticholinergic side effects.

(Choice C) Duloxetine is a dual serotonin and norepinephrine reuptake inhibitor used for the treatment of depression, anxiety, and a variety of chronic pain disorders. Duloxetine can cause confusion, but only rarely causes obstructive voiding symptoms.

(Choices D and G) Finasteride and tamsulosin are used for treatment of benign prostatic hyperplasia and should not cause urinary obstruction or retention.

(Choice E) Gabapentin is useful for painful diabetic neuropathy. It can cause sedation, confusion, and incoordination, but it does not have significant anticholinergic side effects.

Educational objective:
Tricyclic antidepressants have strong anticholinergic properties. Potential side effects include confusion, constipation, and urinary retention. These medications should be used with caution in elderly patients.

References

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A 29-year-old woman comes to the office due to persistent fatigue. The patient has been experiencing daily exhaustion and has "no energy to do little things." Her symptoms began 3 years ago after she closed her jewelry-making business due to financial problems. The patient used to enjoy creating unique jewelry pieces but has had no interest in making anything since her business closed. She has felt unhappy throughout this time, avoiding friends and social gatherings, and is hopeless that her life will improve. She has had no changes in appetite or sleeping patterns, problems with concentration, or suicidal thoughts. Physical examination and laboratory evaluation are unremarkable. Which of the following is the most likely diagnosis?

- A. Adjustment disorder with depressed mood
- B. Avoidant personality disorder
- C. Chronic fatigue syndrome
- D. Major depressive disorder
- E. Persistent depressive disorder (dysthymia)

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A 29-year-old woman comes to the office due to persistent fatigue. The patient has been experiencing daily exhaustion and has "no energy to do little things." Her symptoms began 3 years ago after she closed her jewelry-making business due to financial problems. The patient used to enjoy creating unique jewelry pieces but has had no interest in making anything since her business closed. She has felt unhappy throughout this time, avoiding friends and social gatherings, and is hopeless that her life will improve. She has had no changes in appetite or sleeping patterns, problems with concentration, or suicidal thoughts. Physical examination and laboratory evaluation are unremarkable. Which of the following is the most likely diagnosis?

- A. Adjustment disorder with depressed mood (9%)
- ✗ B. Avoidant personality disorder (0%)
- C. Chronic fatigue syndrome (1%)
- D. Major depressive disorder (18%)
- ✓ E. Persistent depressive disorder (dysthymia) (69%)

Incorrect
Correct answer
E

69%
Answered correctly

04 secs
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Explanation

Differential diagnosis of depressed mood	
Major depressive disorder	• ≥2 weeks • **≥5 of 9** symptoms: depressed mood & SIGECAPS • Significant functional impairment

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Differential diagnosis of depressed mood	
Major depressive disorder	• ≥2 weeks • **≥5 of 9** symptoms: depressed mood & SIGECAPS • Significant functional impairment • No lifetime history of mania
Persistent depressive disorder (dysthymia)	• Chronic depressed mood ≥2 years • ≥2 of the following: appetite disturbance, sleep disturbance, low energy, low self-esteem, poor concentration, hopelessness
Adjustment disorder with depressed mood	• Onset within 3 months of identifiable stressor • Marked distress &/or functional impairment • Does not meet criteria for another DSM-5 disorder
Normal stress response	• Not excessive or out of proportion to severity of stressor • No significant functional impairment
SIGECAPS = **S**leep disturbance, loss of **I**nterest, excessive **G**uilt, low **E**nergy, impaired **C**oncentration, **A**ppetite disturbance, **P**sychomotor agitation/retardation, and **S**uicidal ideation.	

For the past 3 years, this patient has had an unrelenting **depressed mood** (eg, unhappy throughout this time), low energy, and feelings of hopelessness. In the absence of additional depressive symptoms (eg, changes in appetite or sleeping patterns, problems with concentration, suicidal thoughts), her presentation is consistent with a **persistent depressive disorder** (PDD), also known as dysthymia.

To diagnose PDD, there must be the presence of depressed mood and **≥2 of the following** over a period of **≥2 years** (without a symptom-free period >2 months):

- Poor or excessive appetite

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For the past 3 years, this patient has had an unrelenting **depressed mood** (eg, unhappy throughout this time), low energy, and feelings of hopelessness. In the absence of additional depressive symptoms (eg, changes in appetite or sleeping patterns, problems with concentration, suicidal thoughts), her presentation is consistent with a **persistent depressive disorder** (PDD), also known as dysthymia.

To diagnose PDD, there must be the presence of depressed mood and **≥2 of the following** over a period of **≥2 years** (without a symptom-free period >2 months):

- Poor or excessive appetite
- Insomnia or hypersomnia
- **Low energy or fatigue**
- Low self-esteem
- Poor concentration or problems making decisions
- **Hopelessness**

While there is significant overlap with major depressive disorder (eg, depressed mood and/or anhedonia can occur in both), PDD can be differentiated from major depression by the number of concurrent depressive symptoms (eg, guilt, psychomotor disturbance, suicidal ideation, impaired concentration, appetite change, sleep disturbance); ≥5 depressive symptoms (not seen in this patient) need to be present for ≥2 weeks to diagnose major depressive disorder **(Choice D)**.

(Choice A) In adjustment disorders, symptoms occur within 3 months of the onset of the stressor(s) and do not persist for more than 6 months after the stressor or its consequences have terminated. However, adjustment disorders are superseded and not diagnosed if criteria for another disorder (eg, PDD, MDD) are met.

(Choice B) Although this patient is avoiding friends and social gatherings, this is better attributed to her depressed mood and fatigue rather than avoidant personality disorder. In addition, this patient's avoidance started 3 years ago, whereas avoidant personality disorder is characterized by onset in early adulthood with a pervasive pattern of

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- **Low energy or fatigue**
- Low self-esteem
- Poor concentration or problems making decisions
- **Hopelessness**

While there is significant overlap with major depressive disorder (eg, depressed mood and/or anhedonia can occur in both), PDD can be differentiated from major depression by the number of concurrent depressive symptoms (eg, guilt, psychomotor disturbance, suicidal ideation, impaired concentration, appetite change, sleep disturbance); ≥5 depressive symptoms (not seen in this patient) need to be present for ≥2 weeks to diagnose major depressive disorder **(Choice D)**.

(Choice A) In adjustment disorders, symptoms occur within 3 months of the onset of the stressor(s) and do not persist for more than 6 months after the stressor or its consequences have terminated. However, adjustment disorders are superseded and not diagnosed if criteria for another disorder (eg, PDD, MDD) are met.

(Choice B) Although this patient is avoiding friends and social gatherings, this is better attributed to her depressed mood and fatigue rather than avoidant personality disorder. In addition, this patient's avoidance started 3 years ago, whereas avoidant personality disorder is characterized by onset in early adulthood with a pervasive pattern of inhibition, feelings of inadequacy, and hypersensitivity to evaluation.

(Choice C) Chronic fatigue syndrome (CFS) is characterized by ≥6 months of significant reduction in activity with accompanying fatigue not relieved by rest, drastic worsening of symptoms after activity (ie, post-exertional malaise), and sleep impairments plus cognitive impacts (ie, "brain fog"). While this patient has low energy and fatigue, the absence of a history of sleep or concentration difficulties makes CFS unlikely.

Educational objective:
Persistent depressive disorder (ie, dysthymia) is characterized by chronic depressed mood and accompanying depressive symptoms lasting for ≥2 years. It can often be differentiated from major depressive disorder by the number of concurrent depressive symptoms (eg, ≥5 needed for major depression).

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An 8-year-old boy is brought to the office due to severe behavioral problems. The patient has been suspended from school on two occasions over the past year due to running around in the classroom and talking back to his teachers. His parents report that he is "in constant motion" and are concerned about his poor grades and inability to follow directions or household routines. The patient has a history of mild asthma and no other medical problems. There is a family history of schizophrenia in a maternal uncle. Physical examination shows marked fidgeting and difficulty staying seated but is otherwise normal. The boy frequently interrupts his mother while she speaks with the physician. Treatment with methylphenidate is recommended. The parents should be educated about which of the following regarding this medication?

- A. Acute dystonia
- B. Decreased appetite and weight loss
- C. Delayed onset of action
- D. Polyuria and polydipsia
- E. Increased appetite and weight gain
- F. Initial worsening of symptoms
- G. Life-threatening rash
- H. Sedation

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- A. Acute dystonia (1%)
- ✓ B. Decreased appetite and weight loss (76%)
- C. Delayed onset of action (2%)
- D. Polyuria and polydipsia (0%)
- E. Increased appetite and weight gain (6%)
- F. Initial worsening of symptoms (8%)
- G. Life-threatening rash (0%)
- H. Sedation (4%)

Correct

76%
Answered correctly

01 min, 07 secs
Time Spent

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Explanation

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Explanation

This patient's hyperactivity, impulsivity, and disorganization that are resulting in behavioral problems both at school and at home are characteristic of attention-deficit hyperactivity disorder **(ADHD)**. **Psychostimulants** (methylphenidate and amphetamines) are first-line treatment for ADHD in school-age children and are generally safe and well tolerated. They have a rapid onset of action, resulting in improvement in core ADHD symptoms for the expected duration of action **(Choices C and F)**.

The most **common adverse effects** include **decreased appetite**, **weight loss**, and **insomnia**. Most affected children will experience a mild decrease in appetite that can typically be managed by administering the medication after meals and encouraging the child to eat nutrient-dense foods. Other psychostimulant adverse effects that are less common include tics and increases in heart rate and blood pressure. During treatment, patients are typically seen monthly to monitor weight, height, heart rate, and blood pressure.

(Choices A, E, and H) Increased appetite, weight gain, and sedation are adverse effects commonly associated with second-generation antipsychotics; acute dystonia is an extrapyramidal side effect most commonly seen with high-potency first-generation antipsychotics. These drugs do not have a role in the treatment of ADHD.

(Choice D) The mood stabilizer lithium has been associated with polyuria and polydipsia due to its potential to cause nephrogenic diabetes insipidus. Lithium is used to treat bipolar disorder and is not effective in ADHD.

(Choice G) The risk of life-threatening rash, such as seen in Stevens-Johnson syndrome, has been associated with lamotrigine, an anticonvulsant used to treat seizure and bipolar disorders.

Educational objective:
Decreased appetite and insomnia are the most common adverse effects of psychostimulant medications used to treat attention-deficit hyperactivity disorder. They are usually mild and can be managed without stopping the medication.

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A 31-year-old man is hospitalized after sustaining multiple injuries during a motor vehicle collision. The patient is not conscious initially, and no information is available regarding his medical history. Two days after initial hospitalization, he experiences palpitations and difficulty sleeping. Shortly thereafter, the patient suffers a generalized tonic-clonic seizure. When he recovers, he tells the physician that he usually takes medications for anxiety, bipolar disorder, and chronic low back pain. Temperature is 36.7 C (98.1 F), blood pressure is 129/82 mm Hg, pulse is 92/min, and respirations are 14/min. He appears anxious, tremulous, and diaphoretic. Withdrawal from which of the following medications is the most likely explanation for this patient's presentation?

- A. Lamotrigine
- B. Lithium
- C. Lorazepam
- D. Oxycodone
- E. Quetiapine
- F. Sertraline
- G. Valproate

Submit

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- A. Lamotrigine (1%)
- ✗ B. Lithium (6%)
- ✓ C. Lorazepam (58%)
- D. Oxycodone (23%)
- E. Quetiapine (1%)
- F. Sertraline (2%)
- G. Valproate (5%)

Incorrect
Correct answer
C

58%
Answered correctly

04 secs
Time Spent

2023
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Explanation

This patient's presentation is consistent with **benzodiazepine withdrawal** (eg, lorazepam), which is most often characterized by **rebound anxiety, tremor, insomnia,** and **sympathetic hyperactivity** (eg, diaphoresis,

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This patient's presentation is consistent with **benzodiazepine withdrawal** (eg, lorazepam), which is most often characterized by **rebound anxiety, tremor, insomnia,** and **sympathetic hyperactivity** (eg, diaphoresis, palpitations). In severe cases, **psychotic symptoms** (eg, hallucinations, delusions), **seizures**, and even **death** may occur. Risk of withdrawal is greatest with short-acting agents (eg, alprazolam), prolonged use, and use of higher doses.

Benzodiazepines act on the $GABA_A$ receptor, enhancing the action of the natural ligand, GABA. The body adapts to chronic benzodiazepine exposure by downregulating the $GABA_A$ receptor, leading to tolerance, a phenomenon in which the same dose of a medication yields decreasing effects over time. This same adaptive downregulation process is responsible for the withdrawal syndrome when benzodiazepines are discontinued and the body is unable to balance opposing excitatory neurotransmitters. Benzodiazepine withdrawal is treated by starting a patient on a long-acting benzodiazepine (eg, diazepam) and planning for an extended, gradual taper.

(Choices A and G) The anticonvulsants lamotrigine and valproate are used in bipolar disorder for their mood-stabilizing properties. Withdrawal from these medications would not produce seizures in a patient without an underlying seizure disorder.

(Choices B and E) Withdrawal from lithium or quetiapine, when used to treat bipolar disorder, may be associated with a risk for manic relapse and nonspecific rebound psychiatric symptoms (eg, anxiety, restlessness). However, withdrawal from these medications would not explain this patient's symptoms or seizure.

(Choice D) Opioid (eg, oxycodone) withdrawal is characterized by nausea, vomiting, diarrhea, lacrimation, dilated pupils, and piloerection.

(Choice F) Selective serotonin reuptake inhibitor (eg, sertraline) withdrawal presents with rebound anxiety/dysphoria, dizziness, headache, and nausea.

Educational objective:

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(Choices B and E) Withdrawal from lithium or quetiapine, when used to treat bipolar disorder, may be associated with a risk for manic relapse and nonspecific rebound psychiatric symptoms (eg, anxiety, restlessness). However, withdrawal from these medications would not explain this patient's symptoms or seizure.

(Choice D) Opioid (eg, oxycodone) withdrawal is characterized by nausea, vomiting, diarrhea, lacrimation, dilated pupils, and piloerection.

(Choice F) Selective serotonin reuptake inhibitor (eg, sertraline) withdrawal presents with rebound anxiety/dysphoria, dizziness, headache, and nausea.

Educational objective:
Benzodiazepine withdrawal is characterized by anxiety, tremor, insomnia, and sympathetic hyperactivity (eg, diaphoresis, palpitations). Severe benzodiazepine withdrawal may also be accompanied by psychosis, seizures, or death.

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A 22-year-old man is brought to the office by his mother due to a change in behavior over the past year. Nine months ago, the patient abruptly decided to quit college in his last year and insisted on moving back home to "work on my research without being disturbed." Since then, he has stopped going out with friends, seems uninterested in his usual hobbies of playing and watching football, and spends hours on his computer researching government cover-ups. He stays up late at night, sleeps during the day, and showers only once a week. The patient has no motivation to look for work; his mother reports that when she encourages him to go back to school or work, he becomes agitated and starts accusing her of "being one of the black suits." Physical examination shows poor hygiene but is otherwise normal. Laboratory evaluation, including urine drug screen, is unremarkable. A medication with which of the following primary mechanisms of action is most appropriate for this patient's condition?

- A. Alpha receptor agonism
- B. Dopamine receptor antagonism
- C. Dopamine reuptake inhibition
- D. Gamma-aminobutyric acid receptor agonism
- E. Histamine receptor antagonism
- F. Norepinephrine reuptake inhibition
- G. Serotonin reuptake inhibition

Submit

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A 22-year-old man is brought to the office by his mother due to a change in behavior over the past year. Nine months ago, the patient abruptly decided to quit college in his last year and insisted on moving back home to "work on my research without being disturbed." Since then, he has stopped going out with friends, seems uninterested in his usual hobbies of playing and watching football, and spends hours on his computer researching government cover-ups. He stays up late at night, sleeps during the day, and showers only once a week. The patient has no motivation to look for work; his mother reports that when she encourages him to go back to school or work, he becomes agitated and starts accusing her of "being one of the black suits." Physical examination shows poor hygiene but is otherwise normal. Laboratory evaluation, including urine drug screen, is unremarkable. A medication with which of the following primary mechanisms of action is most appropriate for this patient's condition?

- A. Alpha receptor agonism (0%)
- ✓ B. Dopamine receptor antagonism (76%)
- C. Dopamine reuptake inhibition (5%)
- D. Gamma-aminobutyric acid receptor agonism (2%)
- E. Histamine receptor antagonism (0%)
- F. Norepinephrine reuptake inhibition (0%)
- G. Serotonin reuptake inhibition (14%)

Correct

76% Answered correctly

04 secs Time Spent

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Explanation

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Schizophrenia	
Diagnosis	• ≥2 of the following (at least 1 symptom from 1-3) 1. Delusions 2. Hallucinations 3. Disorganized speech 4. Disorganized or catatonic behavior 5. Negative symptoms (eg, apathy, flat affect) • Continuous impairment ≥6 months • Significant functional decline
Treatment	• Antipsychotic medication • Adjunctive psychosocial interventions (eg, social skills training, cognitive-behavioral therapy, family intervention)

This patient's paranoid delusions and negative symptoms (eg, loss of motivation, social withdrawal, decreased attention to personal hygiene) lasting >6 months are consistent with **schizophrenia**, a psychotic disorder with typical onset in early adulthood. Progressive functional impairment is common, as illustrated by this patient's academic and occupational dysfunction.

Antipsychotic medications are first-line pharmacotherapy for schizophrenia. The primary mechanism of action of antipsychotics is **antagonism** at **postsynaptic dopamine D2 receptors**. Second-generation antipsychotics (SGAs) have the additional property of serotonin type 2 receptor antagonism, and some SGAs (eg, aripiprazole) also act as D2 receptor partial agonists.

(Choice A) Alpha receptor agonism is the mechanism of action of a variety of medications (eg, vasopressors, nasal decongestants), but it does not play a role in the therapeutic action of antipsychotics.

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(Choice A) Alpha receptor agonism is the mechanism of action of a variety of medications (eg, vasopressors, nasal decongestants), but it does not play a role in the therapeutic action of antipsychotics.

(Choices C and F) Dopamine reuptake inhibition, usually in combination with norepinephrine reuptake inhibition, is the mechanism of action of medications used in the treatment of ADHD (eg, methylphenidate, bupropion).

(Choice D) Gamma-aminobutyric acid receptor agonism is the mechanism of action of ethanol, barbiturates, benzodiazepines, and propofol.

(Choice E) Antihistamines are not a first-line treatment for schizophrenia. They are primarily used in the treatment of allergic conditions.

(Choice G) Serotonin reuptake inhibition is the mechanism of action of antidepressant medications, which are primarily used in the treatment of depressive and anxiety disorders. Although patients with schizophrenia often experience mood and anxiety symptoms, antidepressant medication would not effectively target this patient's psychotic symptoms.

Educational objective:
Antipsychotic medications are first-line pharmacotherapy for schizophrenia. Their primary mechanism of action is D2 receptor antagonism.

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A 40-year-old woman comes to the emergency department fearing she is having a heart attack. While clutching her chest and breathing heavily, she says, "I feel like I'm dying." Temperature is 37.2 C (99 F), blood pressure is 125/86 mm Hg, pulse is 110/min and regular, and respirations are 18/min. The patient's pulse oximetry shows 98% on room air. Laboratory evaluation and ECG show no abnormalities. The pain resolves within 10 minutes without treatment, and the patient reports, "I was taking the bus home from work when my chest started feeling really tight. I'm lucky my friend was there and able to help me get to the hospital. What if she's not there next time?" She describes experiencing similar episodes at random places and times that are characterized by a pounding heart, trembling, dizziness, and sweating. She drinks alcohol socially and does not use any medications. This patient is most likely to develop which of the following disorders as a result of her current condition?

- A. Acute stress disorder
- B. Agoraphobia
- C. Brief psychotic disorder
- D. Dependent personality disorder
- E. Generalized anxiety disorder
- F. Separation anxiety disorder

Submit

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- A. Acute stress disorder (7%)
- ✓ B. Agoraphobia (43%)
- C. Brief psychotic disorder (0%)
- D. Dependent personality disorder (7%)
- E. Generalized anxiety disorder (37%)
- F. Separation anxiety disorder (3%)

Correct

43%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Panic disorder

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Panic disorder	
Clinical features	• Recurrent & unexpected panic attacks with ≥4 of the following: ◦ Chest pain, palpitations, shortness of breath, choking ◦ Trembling, sweating, nausea, chills ◦ Dizziness, paresthesia ◦ Derealization, depersonalization ◦ Fear of losing control or of dying • Worry about additional attacks, avoidance behavior
Treatment	• First-line/maintenance: SSRI/SNRI &/or cognitive-behavioral therapy • Acute distress: benzodiazepines
SNRI = serotonin norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor.	

This patient likely has **panic disorder**, which presents with distressing cardiopulmonary/neurologic symptoms that reach their peak level of intensity in 10 minutes or less and then subside. Due to the intensity of the symptoms and their tendency to mimic a heart attack, patients may fear they are dying and seek treatment in the emergency department.

Patients with panic disorder often develop **agoraphobia**, which is characterized by anxiety about and **avoidance of multiple situations** where they may **feel trapped and helpless** in the event of a panic attack (eg, crowds, enclosed spaces, public transportation). For example, this patient may start avoiding bus rides due to fears of recurrent panic attacks. In severe cases of agoraphobia, patients may restrict their activities to the point that they leave home only with a companion or they become completely housebound.

Agoraphobia is a distinct condition and can be diagnosed with or without the presence of panic disorder.

(Choice A) In acute stress disorder, exposure to a life-threatening trauma results in symptoms of reexperiencing (ie, intrusive memories, flashbacks), avoidance of reminders, negative mood, dissociation, and hyperarousal. This

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of multiple situations where they may **feel trapped and helpless** in the event of a panic attack (eg, crowds, enclosed spaces, public transportation). For example, this patient may start avoiding bus rides due to fears of recurrent panic attacks. In severe cases of agoraphobia, patients may restrict their activities to the point that they leave home only with a companion or they become completely housebound.

Agoraphobia is a distinct condition and can be diagnosed with or without the presence of panic disorder.

(Choice A) In acute stress disorder, exposure to a life-threatening trauma results in symptoms of reexperiencing (ie, intrusive memories, flashbacks), avoidance of reminders, negative mood, dissociation, and hyperarousal. This patient does not have a history of experiencing a traumatic event.

(Choice C) Although patients may have the fear of "going crazy" while experiencing a panic attack, they are not at greater risk of developing psychotic symptoms (eg, delusions, hallucinations, disorganized speech and/or behavior). Acute psychotic symptoms would be more indicative of brief psychotic disorder.

(Choices D and F) This patient is fearful of leaving home unaccompanied due to a concern about future panic attacks rendering her helpless. In dependent personality disorder, individuals have a lifelong pattern of seeking out relationships due to feeling helpless when alone. Separation anxiety disorder in adults consists of ≥6 months of excessive and distressing anxiety due to separation from a significant attachment figure (eg, spouse, child), unrelated to a fear of being debilitated by panic attack symptoms.

(Choice E) Generalized anxiety disorder is characterized by persistent and excessive worry about multiple issues (eg, work, health, finances). This patient's anxiety is focused on her panic symptoms and future attacks.

Educational objective:
Panic disorder consists of recurrent and unexpected panic attacks characterized by an abrupt surge of anxiety and distressing cardiopulmonary/neurologic symptoms. Agoraphobia, a common comorbid disorder, results in anxiety about and avoidance of situations where patients may feel trapped and helpless in the event of a panic attack (eg, crowds, enclosed spaces, public transportation).

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An 11-year-old girl is brought to the office due to disruptive behavior at home and at school. Her parents report that she gets in trouble for talking during class and not following instructions. Although the patient is of above-average intelligence, her grades are poor. Teachers note that she makes careless mistakes while rushing through tests and frequently forgets to hand in assignments. At home, she is easily distracted while trying to focus on her homework. The patient has frequent conflicts with her mother, who says, "Getting her ready for school in the morning is impossible. We're frequently late because she always misplaces her cell phone and books." The patient has no other medical history, and developmental milestones are within normal range. Physical examination shows no abnormalities. The girl and her parents are willing to consider medication if it will help. A drug with which of the following mechanisms of action is most appropriate for this patient?

- A. Antagonism of alpha-2 adrenergic receptors
- B. Antagonism of dopamine D2 receptors
- C. Increased availability of norepinephrine and dopamine
- D. Increased availability of serotonin
- E. Increased availability of serotonin and norepinephrine
- F. Positive allosteric modulation of GABA

Submit

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An 11-year-old girl is brought to the office due to disruptive behavior at home and at school. Her parents report that she gets in trouble for talking during class and not following instructions. Although the patient is of above-average intelligence, her grades are poor. Teachers note that she makes careless mistakes while rushing through tests and frequently forgets to hand in assignments. At home, she is easily distracted while trying to focus on her homework. The patient has frequent conflicts with her mother, who says, "Getting her ready for school in the morning is impossible. We're frequently late because she always misplaces her cell phone and books." The patient has no other medical history, and developmental milestones are within normal range. Physical examination shows no abnormalities. The girl and her parents are willing to consider medication if it will help. A drug with which of the following mechanisms of action is most appropriate for this patient?

- A. Antagonism of alpha-2 adrenergic receptors (7%)
- B. Antagonism of dopamine D2 receptors (4%)
- ✓ C. Increased availability of norepinephrine and dopamine (63%)
- ✗ D. Increased availability of serotonin (4%)
- E. Increased availability of serotonin and norepinephrine (14%)
- F. Positive allosteric modulation of GABA (5%)

Incorrect
Correct answer
C

63%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

This patient's inattention, distractibility, disorganization, and forgetfulness are characteristic of attention-deficit

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This patient's inattention, distractibility, disorganization, and forgetfulness are characteristic of attention-deficit hyperactivity disorder (ADHD). Norepinephrine and dopamine are the key neurotransmitters involved in the pathophysiology of ADHD symptoms. Symptoms of hyperactivity, impulsivity, and inattention have been linked to reduced levels of norepinephrine and dopamine in the prefrontal cortex.

Stimulant drugs, including methylphenidate and amphetamines, are **first-line** drug treatments for school-age children with ADHD. They work by **blocking norepinephrine** and **dopamine reuptake** at synapses in the prefrontal cortex. In addition, amphetamines increase the release of norepinephrine and dopamine from presynaptic storage vesicles and inhibit monoamine oxidase.

(Choice A) Alpha-2 adrenergic agonists (not antagonists) are used in the treatment of ADHD but do not have the same evidence for efficacy as stimulants. Examples include clonidine and guanfacine.

(Choice B) Antagonism of dopamine D2 receptors is the mechanism of action of antipsychotic medications. These drugs do not specifically treat ADHD.

(Choices D and E) Selective serotonin reuptake inhibitor antidepressants increase availability of serotonin by blocking serotonin reuptake from the synapse. Serotonin-norepinephrine reuptake inhibitors block the reuptake of both serotonin and norepinephrine. These agents are commonly used to treat depressive and anxiety disorders, not ADHD.

(Choice F) Benzodiazepines work as positive allosteric modulators of GABA, facilitating the increased frequency of chloride-channel opening in the GABA receptor. Benzodiazepines have sedative, hypnotic, anxiolytic, anticonvulsant, and muscle-relaxant properties.

Educational objective:
Stimulant medications are a first-line treatment for attention-deficit hyperactivity disorder. They work by increasing the availability of norepinephrine and dopamine in the prefrontal cortex.

References

https://t.me/USMLEWorldStep1

This patient's inattention, distractibility, disorganization, and forgetfulness are characteristic of attention-deficit

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References

Exhibit Display

Attention deficit hyperactivity disorder	

Clinical features	• Inattentive &/or hyperactive/impulsive symptoms for ≥6 months
	  ◦ **Inattentive symptoms:** difficulty focusing, distractible, does not listen or follow instructions, disorganized, forgetful, loses/misplaces objects
	  ◦ **Hyperactive/impulsive symptoms:** fidgety, unable to sit still, "driven by a motor," hypertalkative, interrupts, blurts out answers
	• Several symptoms present **before age 12**
	• Symptoms occur in at least 2 settings (home, school) & cause functional impairment
	• Subtypes: predominantly inattentive, predominantly hyperactive/impulsive, combined type

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A 27-year-old woman comes to the office due to concerns about her weight. She is frustrated about gaining a few pounds, although she maintains a well-balanced diet and exercises for an hour 3 times a week. The patient has been worried for years that her thighs are "huge" and "covered in cellulite." She always wears loose-fitting pants and spends hours a day researching leg exercises and measuring the circumference of her thighs. The patient generally stays at home and avoids social activities as she feels people tend to stare at her. She weighs 58 kg (127.9 lb) and is 170 cm (5 ft 7 in) tall. Physical examination is normal. Which of the following is the most likely diagnosis?

- A. Agoraphobia
- B. Anorexia nervosa
- C. Avoidant personality disorder
- D. Body dysmorphic disorder
- E. Bulimia nervosa
- F. Delusional disorder
- G. Obsessive-compulsive disorder
- H. Social anxiety disorder

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- A. Agoraphobia (0%)
- B. Anorexia nervosa (2%)
- ✗ C. Avoidant personality disorder (0%)
- ✓ D. Body dysmorphic disorder (93%)
- E. Bulimia nervosa (1%)
- F. Delusional disorder (0%)
- G. Obsessive-compulsive disorder (1%)
- H. Social anxiety disorder (0%)

Incorrect
Correct answer
D

93%
Answered correctly

04 secs
Time Spent

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Explanation

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Body dysmorphic disorder	
Clinical features	• Preoccupation with ≥1 perceived physical defects • Defects not observable or appear slight to others • Repetitive behavior or mental acts performed in response to the preoccupation • Significant distress or impairment
Differential diagnosis	• Delusional disorder (fixed, false beliefs unrelated to appearance) • Eating disorders (distorted body image & concerns focused on weight) • Obsessive-compulsive disorder (nonappearance-related obsessions & compulsions)

Body dysmorphic disorder (BDD) involves a **fixation** with a **perceived defect** in **appearance** that is not evident or appears slight to others. Patients may believe that they look ugly or hideous due to their appearance concerns, which results in the performance of **repetitive behaviors** (eg, excessive mirror checking, grooming) or mental acts (eg, comparison with others).

The disorder causes significant distress and/or psychosocial impairment, often resulting in unnecessary plastic surgery, avoidance behavior, and interpersonal problems. Patient insight ranges from good to absent (absolute conviction that beliefs about their appearance are true).

(Choice A) Avoidance of public areas is present in both agoraphobia and BDD; however, in agoraphobia, avoidance is motivated by thoughts about not being able to escape if a panic attack were to occur as opposed to concerns about appearance.

(Choices B and E) Weight concerns may occur in both body dysmorphic and eating disorders. However, this patient does not meet diagnostic criteria for either anorexia or bulimia nervosa (eg, normal weight, no evidence of binges or inappropriate compensatory behaviors).

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(eg, comparison with others).

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(Choices B and E) Weight concerns may occur in both body dysmorphic and eating disorders. However, this patient does not meet diagnostic criteria for either anorexia or bulimia nervosa (eg, normal weight, no evidence of binges or inappropriate compensatory behaviors).

(Choices C and H) Although patients with BDD are frequently socially anxious and avoidant, the feelings result from their distorted beliefs about their appearance. In avoidant personality disorder and social anxiety disorder, social avoidance is related to fears of rejection and criticism from others.

(Choice F) Patients with BDD can have delusional beliefs about their appearance, with a firm conviction that their perception is accurate. However, this is diagnosed as BDD with absent insight, rather than delusional disorder, because it involves only fixed, false beliefs about appearance.

(Choice G) Obsessive-compulsive disorder is characterized by intrusive obsessions and/or time-consuming compulsions. When obsessions and compulsions are limited to concerns about physical appearance, BDD is the appropriate diagnosis.

Educational objective:
Body dysmorphic disorder involves fixation on a perceived defect in appearance and repetitive behaviors in response to the fixation. It can present with absent insight/delusional beliefs and result in significant psychosocial dysfunction.

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A 72-year-old man is hospitalized due to a leg injury following a high-speed motor vehicle collision. Medical history is significant for hypertension, hypercholesterolemia, and hearing loss. The patient drinks a glass of wine every day. Examination shows localized swelling and severe tenderness under the right knee; the presence of a tibial fracture is confirmed by imaging. The patient undergoes open reduction and internal fixation without any perioperative complications. On the first postoperative night, he describes visual hallucinations of his deceased brother in the hospital room with him and perseverates about people invading his home. Vital signs are normal. The patient is disoriented and unable to cooperate with the mental status examination. He appears to respond to internal stimuli. Which of the following interventions is most likely indicated to prevent further worsening of his condition?

- A. Facilitating uninterrupted nocturnal sleep
- B. Providing sedation by administering a benzodiazepine
- C. Reducing daytime visual stimulation by closing window blinds
- D. Reducing hyperstimulation by removing hearing aids
- E. Treating pain with nonpharmacologic aids only

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- ✓ A. Facilitating uninterrupted nocturnal sleep (41%)
- ✗ B. Providing sedation by administering a benzodiazepine (35%)
- C. Reducing daytime visual stimulation by closing window blinds (5%)
- D. Reducing hyperstimulation by removing hearing aids (4%)
- E. Treating pain with nonpharmacologic aids only (11%)

Incorrect
Correct answer
A

41%
Answered correctly

04 secs
Time Spent

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Explanation

Delirium prevention	
	• Neurologic: dementia, stroke, Parkinson

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Delirium prevention	
Risk factors	• Neurologic: dementia, stroke, Parkinson disease • Medical: advanced age, multiple comorbidities • Polypharmacy, psychoactive drugs* • Sleep disruption • Sensory impairment • Immobilization
Prevention strategies	• Reorientation: familiar objects, verbal reminders • Cognitive stimulation: family visits, music • Environment: noise reduction, blinds open • Polypharmacy/psychoactive drug avoidance • Sleep facilitation: bright day/dim night lighting • Visual/hearing aids • Mobilization: out of bed, restraint avoidance
*Anticholinergics (eg, antihistamines, tricyclics), benzodiazepines, opioids, muscle relaxants, corticosteroids.	

Delirium is a common confusional state characterized by **altered consciousness** and cognitive disturbances

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Delirium is a common confusional state characterized by **altered consciousness** and cognitive disturbances such as disorientation or altered perception (eg, hallucinations, delusions). The key features of acute onset and fluctuating course distinguish it from other cognitive (eg, dementia) and perception (eg, psychosis) disorders. Delirium most commonly affects patients with **predisposing risk factors** (eg, advanced age, dementia, sensory impairment).

Because **sleep-wake cycle disruption** can be both a risk factor as well as a manifestation of delirium, **facilitation of nocturnal sleep** is helpful in prevention and management. Delirium and sleep disturbances are both significantly increased by the hospital environment (eg, ambient noise, frequent awakenings). Minimizing noise and patient interventions at night promotes uninterrupted sleep, and physiologically appropriate lighting (ie, bright day/dim night) helps maintain circadian alignment. These measures significantly decrease delirium incidence and sedative-hypnotic use (an additional delirium risk factor).

(Choice B) Benzodiazepines have a limited role in the treatment of delirium because they frequently precipitate or prolong (rather than resolve) it. They are most useful in the setting of alcohol withdrawal (which can cause hallucinations but would also cause abnormal vital signs).

(Choice C) Closing window blinds during the day restricts the ability of the intrinsic circadian system to synchronize with the 24-hour day, which disrupts the sleep-wake cycle and increases delirium risk.

(Choice D) Removing hearing aids contributes to disorientation and sensory deprivation, thus increasing delirium risk. Providing hearing aids helps reduce delirium incidence.

(Choice E) Nonpharmacologic and nonopioid pain management is desirable because opioids frequently precipitate delirium. However, postsurgical pain also significantly increases delirium risk and typically requires pharmacologic treatment.

Educational objective:
Because disruption of the sleep-wake cycle is both a risk factor and manifestation of delirium, facilitation of nocturnal sleep (eg, minimizing noise & patient interventions, appropriate day/night lighting) is helpful for delirium

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such as disorientation or altered perception (eg, hallucinations, delusions). The key features of acute onset and fluctuating course distinguish it from other cognitive (eg, dementia) and perception (eg, psychosis) disorders. Delirium most commonly affects patients with **predisposing risk factors** (eg, advanced age, dementia, sensory impairment).

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A 44-year-old man comes to the office due to low mood, impaired concentration, increased sleep and appetite, feelings of heaviness in his arms and legs, and loss of energy. He is having difficulty at work as he is overly sensitive to criticism. Although his boss has told him not to worry, the patient is concerned that his job is in jeopardy due to poor performance. His symptoms started 8 months ago without any clear-cut precipitating event. The patient received adequate trials of 3 different antidepressants without improvement and has been off of medication for the past several weeks. His physician is now considering electroconvulsive therapy (ECT). The patient declines ECT and asks to try another medication. The physician then considers phenelzine. The presence of which of the following additional symptoms would make the patient more likely to respond to this medication?

- A. Auditory hallucinations
- B. Decreased libido
- C. Delusions
- D. Memory impairment
- E. Mood reactivity
- F. Rapid speech

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- A. Auditory hallucinations (14%)
- ✗ B. Decreased libido (15%)
- C. Delusions (7%)
- D. Memory impairment (11%)
- ✓ E. Mood reactivity (46%)
- F. Rapid speech (4%)

Incorrect
Correct answer
E

46%
Answered correctly

04 secs
Time Spent

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Explanation

Monoamine oxidase inhibitors (**MAOIs**) (eg, phenelzine, tranylcypromine) are antidepressants that work by inhibiting oxidative deamination, thereby increasing the presynaptic availability of serotonin, norepinephrine, and

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Monoamine oxidase inhibitors (**MAOIs**) (eg, phenelzine, tranylcypromine) are antidepressants that work by inhibiting oxidative deamination, thereby increasing the presynaptic availability of serotonin, norepinephrine, and dopamine. Due to their risk of severe adverse effects (eg, hypertensive crisis, serotonin syndrome), MAOIs are not considered first- or second-line antidepressant treatments. However, MAOIs are still useful in certain situations when other antidepressants fail. In addition to their role in **treatment-resistant major depressive disorder** (MDD), there is some evidence to suggest that they are superior to other classes of antidepressants in the treatment of MDD with atypical features.

MDD with atypical features is characterized by **mood reactivity** (ie, mood improves in response to positive events), **leaden paralysis** (ie, patient's arms and legs feel extremely heavy), **rejection sensitivity** (ie, overly sensitive to slight criticism), and the reversed vegetative signs of **increased sleep and appetite**. This patient is both treatment-resistant (failure of multiple antidepressant agents) and has atypical features, making him a good candidate for a trial of an MAOI.

(Choices A and C) The presence of psychotic symptoms such as hallucinations and delusions would be consistent with MDD with psychotic features. This subtype of MDD requires the addition of an antipsychotic as it is unlikely to respond to an antidepressant alone.

(Choice B) Many antidepressants, including MAOIs, have sexual side effects that can worsen preexisting sexual dysfunction. Bupropion and mirtazapine are antidepressants that do not cause sexual side effects.

(Choice D) Memory impairment would be a relative contraindication for use of an MAOI. Patients taking MAOIs must be cognitively intact and remember to avoid tyramine-containing foods and drug-drug interactions that could lead to a hypertensive crisis or serotonin syndrome.

(Choice F) Rapid speech is a possible manic symptom that would raise concern about the presence of mixed depressive and manic symptoms. Antidepressants, particularly MAOIs, are not indicated for patients exhibiting mixed features.

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Educational objective:
Monoamine oxidase inhibitors are particularly useful in patients with treatment-resistant major depressive disorder with atypical features. Increased appetite and sleep, leaden paralysis, rejection sensitivity, and mood reactivity are hallmarks of the atypical subtype.

References

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A 13-month-old girl is brought to the office by her mother. She is worried that there is something wrong and explains, "My daughter used to sit on her own and loved babbling and clapping her hands. She still plays with her sisters and likes snuggles, but for the past 3 months she hasn't babbled as much, and can no longer sit without my help. She twists her hands together and I cannot get her to stop. I am worried that the skin on her hands is getting red, dry, and painful." Weight and height are in the 60th percentile. The patient's head growth, however, has decreased from the 50th to the 40th percentile in 3 months. On examination, the child is globally hypotonic and unable to sit upright without being held. She makes no sound apart from an occasional grunt. She shows interest in toys the doctor provides her but does not reach out for them, wringing her hands repeatedly. Which of the following best explains this patient's condition?

- A. Angelman syndrome
- B. Autism spectrum disorder
- C. Fragile X syndrome
- D. Lesch-Nyhan syndrome
- E. Rett syndrome
- F. Tay-Sachs disease

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- A. Angelman syndrome (5%)
- ✗ B. Autism spectrum disorder (6%)
- C. Fragile X syndrome (2%)
- D. Lesch-Nyhan syndrome (9%)
- ✓ E. Rett syndrome (69%)
- F. Tay-Sachs disease (6%)

Incorrect
Correct answer
E

69%
Answered correctly

04 secs
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Explanation

This patient's normal development through age 10 months followed by regression (eg, loss of babbling and motor

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This patient's normal development through age 10 months followed by regression (eg, loss of babbling and motor control) and development of hand wringing is characteristic of **Rett syndrome**, a neurodevelopmental disorder that occurs mainly in girls. Most cases are due to de novo mutations in the X-linked *MECP2* gene. Rett syndrome is characterized by normal development until **age 6-18 months**, followed by a **loss of motor and language skills** and the development of **stereotypic hand movements**. **Deceleration of head growth** is a classic feature of Rett syndrome and can be an early sign. Other features include seizures, intellectual disability, autistic features, and breathing abnormalities.

There is no specific therapy for Rett syndrome; many patients survive well into adulthood with severe, permanent neurologic deficits.

(Choice A) Features of Angelman syndrome include a happy disposition, jerky gait, and hand flapping. Development is commonly delayed rather than initially normal.

(Choice B) Although this patient has deficits in verbal communication and stereotypical hand movements, she does not display other features of autism spectrum disorder (ASD) such as deficits in social reciprocity, emotional restriction, or repetitive interests. She plays and snuggles with family and appears to be trying to interact with the doctor.

(Choice C) Fragile X syndrome mainly affects males and is associated with CGG trinucleotide repeats on the X chromosome. Features include intellectual disability; a long, narrow face; large protruding ears; macrocephaly; and macroorchidism.

(Choice D) Lesch-Nyhan syndrome is an X-linked recessive disorder characterized by a deficiency in HGPRT (hypoxanthine guanine phosphoribosyltransferase), leading to an increase in uric acid levels. Although hypotonia and involuntary movements such as hand wringing may be present, developmental milestones are typically delayed rather than normal. Gout and self-mutilating behaviors (eg, lip and finger biting) are commonly seen.

(Choice F) Tay-Sachs disease is a lysosomal storage disease caused by a deficiency in beta-hexosaminidase A

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breathing abnormalities.

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(Choice F) Tay-Sachs disease is a lysosomal storage disease caused by a deficiency in beta-hexosaminidase A (Hex A). Like Rett syndrome, it presents with a regression of motor skills, but it typically begins earlier (age 2-6 months) and is associated with macrocephaly and a cherry red spot on the macula.

Educational objective:
Rett syndrome is characterized by loss of speech and motor skills, deceleration of head growth, and stereotypic purposeless hand movements after a period of normal development. It affects mainly girls and is associated with mutations in the *MECP2* gene.

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A 39-year-old right-handed man is brought to the office by his wife due to concerns about his behavior. Two months ago, the patient was robbed and hit in the head and knees with a baseball bat when he resisted. He initially had difficulty walking, but his injuries have since healed. His wife and other family members say that his overall demeanor has changed significantly since the attack. Prior to the assault, the patient was kind, considerate, and extremely polite. However, since the attack, he has been very irritable and rude, and was recently fired from his job for insulting customers and making socially insensitive comments to coworkers. Damage to which anatomical region of the brain is the most likely explanation for this patient's symptoms?

- A. Corpus callosum
- B. Dominant parietal cortex
- C. Dominant temporal cortex
- D. Lateral prefrontal cortex
- E. Nondominant parietal cortex
- F. Nondominant temporal cortex
- G. Orbitofrontal cortex

Submit

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- A. Corpus callosum (1%)
- B. Dominant parietal cortex (4%)
- ✗ C. Dominant temporal cortex (5%)
- D. Lateral prefrontal cortex (51%)
- E. Nondominant parietal cortex (2%)
- F. Nondominant temporal cortex (2%)
- ✓ G. Orbitofrontal cortex (31%)

Incorrect
Correct answer
G

31%
Answered correctly

03 secs
Time Spent

2023
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Explanation

This patient's **personality change**, **disinhibition**, **and irritability** are most likely due to damage affecting the **orbitofrontal cortex** (OFC). The OFC is located in the frontal lobe and has strong modulatory connections to the

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This patient's **personality change**, **disinhibition**, **and irritability** are most likely due to damage affecting the **orbitofrontal cortex** (OFC). The OFC is located in the frontal lobe and has strong modulatory connections to the limbic system (ie, the brain's primary emotional system); it is involved in behavioral and emotional regulation.

Pathological behavioral and emotional changes are more commonly seen with bilateral, rather than unilateral, injury to the OFC. Disinhibition may be associated with significant impulsivity and loss of social etiquette, whereas increased irritability in the context of disinhibition may lead to frank, aggressive behavior. Diagnostic workup includes obtaining information from family and friends about personality changes, neuropsychological testing, and structural brain imaging.

(Choice A) Damage to the corpus callosum can result in the "split-brain" syndrome. Although these patients may appear normal in general social situations, further evaluation can demonstrate lack of interhemispheric transfer of information (eg, patient unable to use one hand to retrieve an object palpated with the other hand).

(Choices B and E) The parietal cortex processes and interprets visual, auditory, and motor signals received from other brain areas. Parietal cortex damage results in difficulties with spatial and visual perception. Dominant lesions (>95% of right-handed and >50% of left-handed patients are left hemisphere dominant) result in Gerstmann syndrome with right-left confusion and difficulty with writing and mathematics. Nondominant parietal cortex lesions (most commonly right-sided) can result in hemi-neglect, constructional apraxia, and denial of the problem.

(Choices C and F) Temporal cortex injury can cause disturbances in language, sensory interpretation, and impaired memory. These patients can also exhibit behavioral changes, such as apathy, hyperorality, hypersexuality, and visual agnosia as seen in Klüver-Bucy syndrome. Nondominant (usually right-sided) lesions can affect nonverbal memory, including musical ability; dominant left-sided lesions can affect verbal memory, such as word recognition. This patient's symptoms are most characteristic of an OFC injury.

(Choice D) The lateral prefrontal cortex is involved in executive functioning, which includes motivation, organization, planning, and purposeful action. Damage to the lateral prefrontal cortex may result in dysexecutive

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injury to the OFC. Disinhibition may be associated with significant impulsivity and loss of social etiquette, whereas increased irritability in the context of disinhibition may lead to frank, aggressive behavior. Diagnostic workup includes obtaining information from family and friends about personality changes, neuropsychological testing, and structural brain imaging.

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(Choice D) The lateral prefrontal cortex is involved in executive functioning, which includes motivation, organization, planning, and purposeful action. Damage to the lateral prefrontal cortex may result in dysexecutive syndrome, a syndrome characterized by significant difficulties performing these functions.

Educational objective:
Patients with orbitofrontal cortex injury often experience personality changes, disinhibition, and irritability secondary to impairment of the behavioral and emotional modulatory systems.

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A 13-year-old girl is brought to the office for a routine visit. Although the patient is doing well in school and has friends, her mother is concerned about a change in her behavior over the past several months. They had previously enjoyed spending time together, but now the patient is frequently moody and spends most of her time on the computer in her locked bedroom. The mother also observes that her daughter gets upset for no reason and has used swear words on occasion. When the mother recently complimented her party outfit, the girl screamed, "I look hideous and I'm not going," and stormed out of the room. Later that day, she seemed fine and went to the party. On examination, the patient is pleasant and cooperative but makes little eye contact and asks if she can keep her tank top on during the examination. Which of the following is the most likely explanation for this girl's behavior?

- A. Body dysmorphic disorder
- B. Borderline personality disorder
- C. Cyclothymic disorder
- D. Disruptive mood dysregulation disorder
- E. Normal adolescent behavior
- F. Oppositional defiant disorder

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A 13-year-old girl is brought to the office for a routine visit. Although the patient is doing well in school and has friends, her mother is concerned about a change in her behavior over the past several months. They had previously enjoyed spending time together, but now the patient is frequently moody and spends most of her time on the computer in her locked bedroom. The mother also observes that her daughter gets upset for no reason and has used swear words on occasion. When the mother recently complimented her party outfit, the girl screamed, "I look hideous and I'm not going," and stormed out of the room. Later that day, she seemed fine and went to the party. On examination, the patient is pleasant and cooperative but makes little eye contact and asks if she can keep her tank top on during the examination. Which of the following is the most likely explanation for this girl's behavior?

- A. Body dysmorphic disorder (7%)
- ✗ B. Borderline personality disorder (2%)
- C. Cyclothymic disorder (1%)
- D. Disruptive mood dysregulation disorder (6%)
- ✓ E. Normal adolescent behavior (80%)
- F. Oppositional defiant disorder (2%)

Incorrect
Correct answer
E

80%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

This patient's intense **self-consciousness**, concerns about appearance and social acceptance, **moodiness**,

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This patient's intense **self-consciousness**, concerns about appearance and social acceptance, **moodiness**, increasing **need for privacy**, and transient **emotional outbursts** are characteristic of **normal adolescence**. Adolescence involves the developmental tasks of separating from the family, developing a sense of identity, and adjusting to the hormonal and physical changes of puberty. This girl's reluctance to remove her tank top for the physical examination is likely related to her self-consciousness regarding pubertal development.

Although differentiating normal adolescent behavior from early signs of psychiatric disorders can be difficult, this patient's engagement with school and friends is reassuring. In contrast, adolescents exhibiting persistent anger, sadness, impulsivity, sleep or appetite disturbance, declining academic performance, and social isolation from peers warrant further evaluation.

(Choice A) Patients with body dysmorphic disorder are excessively preoccupied with perceived defects in their physical appearance and engage in time-consuming, repetitive behaviors (eg, mirror checking, excessive grooming) that cause significant impairment in functioning. This patient's appearance concerns and self-consciousness about her changing body are typical of early adolescence.

(Choice B) Although this girl exhibits mood lability that can be seen in borderline personality disorder, she lacks the pervasive pattern of instability in interpersonal relationships and self-image, marked impulsivity, and self-injury that characterize the disorder. Personality disorders are not diagnosed in adolescence, as the personality is still forming.

(Choice C) Cyclothymic disorder is a chronic, fluctuating mood disturbance involving numerous periods of hypomanic and depressive symptoms that are insufficient to meet the criteria for hypomanic or major depressive episodes. Symptoms must be present for at least a year in children and adolescents and cause significant distress and impairment; this is not the case in this patient.

(Choice D) Disruptive mood dysregulation disorder, a new diagnosis in DSM-5, is characterized by persistent irritability and frequent, developmentally inappropriate temper outbursts. This patient's transient emotional outburst

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sadness, impulsivity, sleep or appetite disturbance, declining academic performance, and social isolation from peers warrant further evaluation.

(Choice A) Patients with body dysmorphic disorder are excessively preoccupied with perceived defects in their physical appearance and engage in time-consuming, repetitive behaviors (eg, mirror checking, excessive grooming) that cause significant impairment in functioning. This patient's appearance concerns and self-consciousness about her changing body are typical of early adolescence.

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(Choice D) Disruptive mood dysregulation disorder, a new diagnosis in DSM-5, is characterized by persistent irritability and frequent, developmentally inappropriate temper outbursts. This patient's transient emotional outburst related to insecurity about social acceptance is consistent with normal adolescent development.

(Choice F) This patient does not exhibit the argumentative, defiant, and vindictive behavior required for the diagnosis of oppositional defiant disorder.

Educational objective:
Adolescence often involves some degree of moodiness, intense self-consciousness, and transient emotional outbursts. Assessment of severity, persistence, and degree of social and academic impairment can help differentiate normal adolescent behavior from behavioral changes requiring further evaluation.

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A 3-year-old boy is brought to the office by his parents due to behavioral difficulties. His mother says, "He is physically healthy and affectionate but has become more defiant and often resists our instructions about getting ready for bed. He plays roughly with his 6-year-old brother and sometimes throws tantrums when he has to share his toys or put them away." His preschool teacher describes him as an "active child" who sometimes talks out loud to classmates while the teacher is speaking. He is easily distracted and often gets up to walk around the classroom. The patient is able to draw circles, speak 3-word sentences, walk up the stairs with alternating feet, and use the toilet, but he cannot wipe himself. His parents express concern about his inability to fully dress himself and about his bed-wetting, which occurs approximately twice a week. Physical examination is unremarkable. Which of the following is the most likely explanation for the child's behavior?

- A. Attention-deficit hyperactivity disorder
- B. Conduct disorder
- C. Developmental delay
- D. Disruptive mood dysregulation disorder
- E. Normal development
- F. Oppositional defiant disorder

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- A. Attention-deficit hyperactivity disorder
- ✗ B. Conduct disorder
- C. Developmental delay
- D. Disruptive mood dysregulation disorder
- ✓ E. Normal development
- F. Oppositional defiant disorder

Incorrect
Correct answer
E

Collecting Statistics

04 secs
Time Spent

2023
Version

Explanation

Developmental milestones of preschoolers

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Developmental milestones of preschoolers				
Age (years)	**Gross motor**	**Fine motor**	**Language**	**Social/cognitive**
3	• Walks up stairs alternating feet • Rides tricycle	• Dresses with help • Uses fork • Copies circle	• Says ≥3-word sentences • Speech 75% intelligible	• Knows age/sex • Plays with other children
4	• Catches large ball	• Draws person with ≥3 body parts • Unbuttons clothes • Holds pencil between fingers & thumb	• Says ≥4-word sentences • Names colors	• Comforts others • Avoids danger • Imaginative play
5	• Hops on 1 foot	• Buttons clothes • Writes some letters	• Speaks in full sentences/tells story • Counts to 10 • Names letters	• Follows rules; takes turns

This boy is exhibiting **age-appropriate behavior**. A short attention span, increased motor activity (eg, difficulty staying seated), occasional impulsivity (eg, speaking out of turn, throwing tantrums when toys are taken), and oppositional behavior at bedtime are consistent with normal developmental variation in young children.

This boy also demonstrates **normal developmental milestones** at age 3, including the ability to copy a circle, walk up stairs with alternating feet, and speak in 3-word sentences. Three-year-olds try to put on some items of

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This boy also demonstrates **normal developmental milestones** at age 3, including the ability to copy a circle, walk up stairs with alternating feet, and speak in 3-word sentences. Three-year-olds try to put on some items of clothing (eg, loose-fitting pants, jacket) but need help to fully get dressed, as seen here. In addition, most are potty-trained during the day but still need help wiping and may not achieve nocturnal urinary continence until age 5 **(Choice C)**.

(Choice A) There is substantial overlap between the normal behavior of preschoolers and the symptoms of attention-deficit hyperactivity disorder (ADHD); therefore, a diagnosis of ADHD is not typically made before age 4. If symptoms of inattentiveness, hyperactivity, and impulsivity continue and persist through kindergarten and cause impairment in at least 2 settings (eg, school and home), then further evaluation for ADHD and other behavioral disorders is appropriate.

(Choices B and F) The diagnosis of oppositional defiant disorder is reserved for children and adolescents with a persistent pattern of irritability, defiance, and vindictiveness. In contrast, this boy's defiant behavior at bedtime and fighting with his sibling are common and developmentally normal at his age. In conduct disorder, antisocial behavior is more severe and involves violation of the basic rights of others or major societal norms.

(Choice D) Disruptive mood dysregulation disorder is characterized by a persistently irritable or angry mood and temper tantrums that are inconsistent with developmental level.

Educational objective:
Short attention span and varying degrees of hyperactivity, impulsivity (eg, tantrums), and defiant behavior are commonly seen in young children. Attention-deficit hyperactivity disorder should not be diagnosed until age ≥4.

Behavioral science Psychiatric/Behavioral & Substance Use Disorder Normal child development

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A 32-year-old man with schizophrenia comes to the office for follow-up. The patient has been stable on his antipsychotic medication for many years. He has infrequent auditory hallucinations and says that the medication "has helped a lot to turn down the volume of the voices." The patient works stocking grocery shelves part-time and lives with his parents, who are supportive. His symptoms first developed gradually at age 14 when he exhibited nonspecific anxiety and became increasingly paranoid that others were talking about him behind his back; he also became preoccupied with finding special meanings in certain numbers. A year later he was hospitalized for a psychotic episode characterized by paranoid delusions and auditory hallucinations that responded rapidly to antipsychotic medication. The patient was able to finish high school. He was hospitalized again briefly at age 22 but has remained out of the hospital since then. Which of the following factors is most predictive of a favorable prognosis for this patient?

- A. Gradual onset of symptoms
- B. Lack of precipitating event
- C. Male sex
- D. Onset before the age of 20
- E. Predominantly positive psychotic symptoms

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A 32-year-old man with schizophrenia comes to the office for follow-up. The patient has been stable on his antipsychotic medication for many years. He has infrequent auditory hallucinations and says that the medication "has helped a lot to turn down the volume of the voices." The patient works stocking grocery shelves part-time and lives with his parents, who are supportive. His symptoms first developed gradually at age 14 when he exhibited nonspecific anxiety and became increasingly paranoid that others were talking about him behind his back; he also became preoccupied with finding special meanings in certain numbers. A year later he was hospitalized for a psychotic episode characterized by paranoid delusions and auditory hallucinations that responded rapidly to antipsychotic medication. The patient was able to finish high school. He was hospitalized again briefly at age 22 but has remained out of the hospital since then. Which of the following factors is most predictive of a favorable prognosis for this patient?

- A. Gradual onset of symptoms (16%)
- ✗ B. Lack of precipitating event (8%)
- C. Male sex (2%)
- D. Onset before the age of 20 (9%)
- ✓ E. Predominantly positive psychotic symptoms (62%)

Incorrect
Correct answer
E

62%
Answered correctly

05 secs
Time Spent

2023
Version

Explanation

Prognostic factors in schizophrenia

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Prognostic factors in schizophrenia	
Good	**Poor**
• Later onset • Female sex • Acute onset with precipitant • Predominantly positive symptoms • No family history • Short duration of active symptoms	• Onset in childhood or adolescence • Male sex • Gradual onset (prodrome), no precipitant • Predominantly negative symptoms • Family history of psychotic illness • Long duration of untreated psychosis

Schizophrenia is a chronic psychotic illness with typical onset in early adulthood (peak age: men, early 20s; women, late 20s). Although the disease is chronic, the level of morbidity that those with schizophrenia experience can be dictated by types of symptoms, psychosocial influences, and health care interventions. Notable **favorable prognostic factors** include:

- Early intervention
- Presence of a multidisciplinary care team (eg, case manager, psychiatrist)
- Limited extent of external stressors (eg, trauma, conflict)
- Favorable socioeconomic circumstances
- **Symptom types** (positive > negative)

Patients with predominantly **positive psychotic symptoms** (eg, hallucinations, delusions), such as this patient, tend to have a more **favorable prognosis** than patients with predominantly negative symptoms (eg, flat affect, loss of motivation, anhedonia). This is because **antipsychotic medications** are **more effective** for treating positive psychotic symptoms than negative symptoms. Early intervention with antipsychotic medication to decrease the duration of active psychosis also improves the course of illness.

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(Choices A and B) Most primary thought disorders (eg, schizophrenia, schizoaffective disorder) are chronic, insidious disorders with a gradual onset (prodrome) of weeks to months. In contrast, the presence of sudden onset of symptoms from a precipitating event suggests an underlying cause that may allow for treatment and symptom improvement when the precipitant is addressed.

(Choice C) Although unclear, possible reasons for poorer outcomes in men include biological (ie, genetic influences, changes in brain structure, hormones) and psychosocial (ie, social support deficits, substance use, vocational pressures/expectations) differences.

(Choice D) Patients with childhood or adolescent onset typically have a more severe form of the illness and a worse prognosis; the early onset may be due to a neurodevelopmental process with a deteriorating course.

Educational objective:
Favorable prognostic factors in schizophrenia include predominantly positive psychotic symptoms, acute onset (shorter prodrome) with an identifiable precipitant, and older age at onset.

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A 16-year-old boy with suicidal thoughts is brought to the office by his parents. He has been in constant conflict with his parents since refusing to stop drinking alcohol, which he does on a daily basis. The patient is the oldest of 6 children; his mother suffers from lower back pain and relies on him for child care, which he finds overwhelming. His father works 2 jobs and is often not around to help with the children. His mother keeps a firearm by her bedside for protection when she is alone with the children at night. The patient dropped out of high school last year after getting dumped by his girlfriend. He recently contracted Lyme disease with resultant symptoms of fatigue and myalgia. Which of the following interventions is the best next step to decrease this patient's risk of completed suicide?

- A. Advise the mother to lock away her firearm
- B. Initiate treatment for depression
- C. Provide the mother with assistance in the home
- D. Start alcohol abuse counseling
- E. Support the patient's return to high school
- F. Treat the patient's Lyme disease

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- ✓ A. Advise the mother to lock away her firearm (73%)
- ✗ B. Initiate treatment for depression (8%)
- C. Provide the mother with assistance in the home (3%)
- D. Start alcohol abuse counseling (5%)
- E. Support the patient's return to high school (2%)
- F. Treat the patient's Lyme disease (6%)

Incorrect
Correct answer
A

73%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Suicide risk & protective factors	
	Psychiatric disorders, prior suicide attempts

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Suicide risk & protective factors	
Risk factors	• Psychiatric disorders, prior suicide attempts • Hopelessness • Never married, divorced, separated • Living alone • Unemployed or unskilled • Physical illness • Family history of suicide, family discord • Access to firearms • Substance abuse, impulsivity
Protective factors	• Social support/family connectedness • Pregnancy • Parenthood • Religion & participation in religious activities

Suicide is a major public health issue that is linked to approximately 1 million deaths worldwide each year. It is the second leading cause of death, after accidents, in those aged 15-24. Suicide risk management involves controlling modifiable factors that decrease the risk of suicide, such as decreasing stress, improving psychosocial support, treating psychiatric illness and substance abuse, managing pain, and limiting **access to firearms** or other means of self-harm. Other risk factors are static and cannot be modified. These include age (teenagers and the elderly), male sex, family history of suicide, and history of previous attempts.

Individuals with access to firearms have 3 times the **risk** of **suicide completion**, as suicide by firearm is associated with a **higher fatality rate** compared to other methods. Due to the impulsivity often associated with suicide in teenagers, limiting this patient's access to firearms is the most important next step to decrease his risk.

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(Choice B) Treatment for this patient's depression should be offered. However, the next step is to advise his mother to lock away her firearm, so that the risk of completed suicide is decreased while treatment takes effect.

(Choice C) Providing the mother with assistance could decrease the patient's burden in the long term but is not an immediate intervention.

(Choice D) Although alcohol use increases the risk for suicide by impairing judgment, this teenager does not acknowledge that he has an alcohol problem and may not be willing to start counseling at this time. Removing access to weapons is a more immediate measure.

(Choice E) Although decreasing this patient's isolation and improving his future prospects by helping him return to school is important in the long term, limiting access to firearms is the most pressing concern.

(Choice F) Chronic illness involving pain is a strong risk factor for attempted suicide. Although the patient's Lyme disease should be treated to prevent further disability, removal of access to firearms is more likely to prevent a completed suicide at this stage.

Educational objective:
Access to firearms greatly increases the risk of completed suicide. Evaluation of a patient's access to guns is a

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modifiable factors that decrease the risk of suicide, such as decreasing stress, improving psychosocial support, treating psychiatric illness and substance abuse, managing pain, and limiting **access to firearms** or other means of self-harm. Other risk factors are static and cannot be modified. These include age (teenagers and the elderly), male sex, family history of suicide, and history of previous attempts.

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Educational objective:
Access to firearms greatly increases the risk of completed suicide. Evaluation of a patient's access to guns is a key part of suicide risk assessment. Other interventions to reduce suicide risk include decreasing stress, increasing psychosocial support, treating psychiatric illness and substance use, and managing pain.

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A medical student just finished the USMLE Step 1 exam and is anxious about her performance. She is especially unnerved when fellow students talk about the difficulty of the exam and discuss their answers to certain questions. The student decides not to think about the exam until her score arrives because "worrying isn't going to change the result." She is delighted when she receives a very high score several weeks later. Before receiving the result, the student exhibited which of the following defense mechanisms?

- A. Denial
- B. Dissociation
- C. Intellectualization
- D. Rationalization
- E. Reaction formation
- F. Repression
- G. Suppression

Submit

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- A. Denial (1%)
- ✗ B. Dissociation (2%)
- C. Intellectualization (5%)
- D. Rationalization (12%)
- E. Reaction formation (1%)
- F. Repression (4%)
- ✓ G. Suppression (72%)

Incorrect
Correct answer
G

72%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Key defense mechanisms	
	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist

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Key defense mechanisms	
Immature	• Acting out: Expressing unacceptable feelings through actions • Denial: Behaving as if an aspect of reality does not exist • Displacement: Transferring feelings to less threatening object/person • Intellectualization: Focusing on nonemotional aspects to avoid distressing feelings • Passive aggression: Avoiding conflict by expressing hostility covertly • Projection: Attributing one's own feelings to others • Rationalization: Justifying behavior to avoid difficult truths • Reaction formation: Transforming unacceptable feelings/impulses into the opposite • Regression: Reverting to earlier developmental stage • Splitting: Experiencing a person/situation as either all positive or all negative
Mature	• Sublimation: Channeling impulses into socially acceptable behaviors • Suppression: Putting unwanted feelings aside to cope with reality

Defense mechanisms are means of protecting oneself from awareness of uncomfortable feelings. They can be classified as immature or mature. Immature defense mechanisms (eg, denial, acting out, regression, splitting) are maladaptive and generally seen in children and in psychopathologic states. Mature defense mechanisms (eg, altruism, sublimation, suppression, humor) are more often used by adults and allow for a healthy, adaptive response to emotional distress.

This student is using **suppression** to alleviate anxiety about her exam results as she is aware of her discomfort but decides not to attend to it. Suppression is a **mature defense mechanism** in which an individual **intentionally puts aside** unpleasant thoughts or **feelings** to better cope with the present reality.

Suppression should not be confused with repression **(Choice F)**, in which unacceptable thoughts or feelings are blocked from entering conscious awareness (eg, an adult who was sexually abused as a child unconsciously

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Suppression should not be confused with repression **(Choice F)**, in which unacceptable thoughts or feelings are blocked from entering conscious awareness (eg, an adult who was sexually abused as a child unconsciously buries feelings about the trauma).

(Choice A) Denial involves avoiding awareness of an external reality (eg, a student who has failed an exam denies having done so).

(Choice B) Dissociation is an immature defense in which a transient disruption to memory, identity, and/or consciousness occurs as a way to cope with a distressing event (eg, this student does not remember taking the exam and feels numb when her peers discuss the questions).

(Choice C) Intellectualization is an immature defense mechanism that involves focusing on nonemotional components of a distressing event to make it more tolerable (eg, this student becomes preoccupied with thinking about the passing rates and other statistics of the exam).

(Choice D) Rationalization involves making excuses for unacceptable feelings or situations (eg, a student explaining that poor performance on an exam was due to the trickiness of the questions).

(Choice E) Reaction formation involves unconsciously transforming an unacceptable thought or feeling into its opposite (eg, a student hiding fears of failing the exam by being overly confident).

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(Choice E) Reaction formation involves unconsciously transforming an unacceptable thought or feeling into its opposite (eg, a student hiding fears of failing the exam by being overly confident).

Educational objective:
Suppression is a mature defense mechanism involving a conscious choice not to dwell on a particular thought or feeling.

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A 10-year-old boy is brought to the office due to poor grades and behavioral problems. Although the patient is very intelligent, his parents report that he struggles at school and has received failing grades because he is easily distracted, makes careless mistakes, and often loses his homework. His teacher has called several times to report that he repeatedly disrupts the class by getting out of his seat and by blurting out answers when he is not called on. At home, the patient does not listen to his parents, does not clean up after himself, and fails to complete chores despite repeated redirection. He has no other medical conditions. Family history is significant for a substance use disorder in the patient's 16-year-old brother and depression in his mother. Treatment options are discussed with the parents. They would like to try medication but prefer a nonstimulant option. Which of the following is the most appropriate pharmacotherapy for this patient?

- A. Alprazolam
- B. Amitriptyline
- C. Aripiprazole
- D. Atomoxetine
- E. Bupropion
- F. Dextroamphetamine
- G. Fluoxetine
- H. Methylphenidate

Submit

https://t.me/USMLEWorldStep1

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- A. Alprazolam (3%)
- ✗ B. Amitriptyline (5%)
- C. Aripiprazole (4%)
- ✓ D. Atomoxetine (45%)
- E. Bupropion (9%)
- F. Dextroamphetamine (4%)
- G. Fluoxetine (8%)
- H. Methylphenidate (18%)

Incorrect
Correct answer
D

45%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

https://t.me/USMLEWorldStep1

Attention deficit hyperactivity disorder	
Clinical features	• Inattentive &/or hyperactive/impulsive symptoms for ≥6 months ◦ **Inattentive symptoms:** difficulty focusing, distractible, does not listen or follow instructions, disorganized, forgetful, loses/misplaces objects ◦ **Hyperactive/impulsive symptoms:** fidgety, unable to sit still, "driven by a motor," hypertalkative, interrupts, blurts out answers • Several symptoms present **before age 12** • Symptoms occur in at least 2 settings (home, school) & cause functional impairment • Subtypes: predominantly inattentive, predominantly hyperactive/impulsive, combined type
Treatment	• Stimulants (methylphenidate, amphetamines) • Nonstimulants (atomoxetine, α-2 adrenergic agonists) • Behavioral therapy

This patient's inattentiveness and hyperactivity (eg, being distractible, making careless mistakes, losing things, not listening, struggling with organization, becoming sidetracked with chores, struggling to remain seated, blurting out answers) are consistent with **attention deficit hyperactivity disorder** (ADHD).

Although stimulants (eg, dextroamphetamine, methylphenidate) are commonly used for ADHD due to their rapid onset and larger treatment effect size, they have the potential for misuse **(Choices F and H)**. For patients who do not want a stimulant, **nonstimulant options**, including norepinephrine reuptake inhibitors (eg, atomoxetine, viloxazine) or alpha-2 adrenergic agonists (eg, clonidine, guanfacine), are available. **Atomoxetine** is a first-line nonstimulant alternative that **lacks abuse potential** and is not a controlled substance.

(Choice A) The benzodiazepine alprazolam has abuse potential and is not effective in treating ADHD.

(Choices B and E) Tricyclic antidepressants (eg, amitriptyline) and norepinephrine and dopamine reuptake inhibitors (eg, bupropion) are not first-line agents in the treatment of ADHD; they are sometimes used for refractory

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Treatment	• Nonstimulants (atomoxetine, α-2 adrenergic agonists) • Behavioral therapy

This patient's inattentiveness and hyperactivity (eg, being distractible, making careless mistakes, losing things, not listening, struggling with organization, becoming sidetracked with chores, struggling to remain seated, blurting out answers) are consistent with **attention deficit hyperactivity disorder** (ADHD).

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(Choice A) The benzodiazepine alprazolam has abuse potential and is not effective in treating ADHD.

(Choices B and E) Tricyclic antidepressants (eg, amitriptyline) and norepinephrine and dopamine reuptake inhibitors (eg, bupropion) are not first-line agents in the treatment of ADHD; they are sometimes used for refractory cases.

(Choice C) Aripiprazole is a second-generation antipsychotic that has no role in the treatment of ADHD.

(Choice G) Selective serotonin reuptake inhibitors (eg, fluoxetine) have no benefit in the treatment of ADHD.

Educational objective:
Atomoxetine is a norepinephrine reuptake inhibitor that can be considered as an alternate to stimulants in the treatment of patients with attention deficit hyperactivity disorder who have a personal or family history of substance abuse.

References

- A critical appraisal of atomoxetine in the management of ADHD.

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An 18-year-old man is brought to the clinic by his mother due to increasingly bizarre behavior over the past 2 months. The patient is in his first semester at an out-of-state college and has had difficulty adjusting to being away from home. For the past few weeks, he has not been attending classes, and he no longer socializes with friends. The patient spends most of his time alone in his dorm room and eats very little because he believes the cafeteria food is poisoned. He has no significant medical or psychiatric history and does not use alcohol or illicit drugs. Physical examination is unremarkable. On mental status examination, he appears disheveled with unwashed hair, makes poor eye contact, and shouts "leave me alone" in response to unseen people. Which of the following is the most likely diagnosis in this patient?

- A. Adjustment disorder
- B. Brief psychotic disorder
- C. Delusional disorder
- D. Major depressive disorder with psychotic features
- E. Schizophrenia
- F. Schizophreniform disorder

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- A. Adjustment disorder (8%)
- ✕ B. Brief psychotic disorder (6%)
- C. Delusional disorder (3%)
- D. Major depressive disorder with psychotic features (7%)
- E. Schizophrenia (9%)
- ✓ F. Schizophreniform disorder (65%)

Incorrect
Correct answer
F

65%
Answered correctly

03 secs
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Explanation

Differential diagnosis of DSM-5 psychotic disorders	
Brief psychotic	

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Differential diagnosis of DSM-5 psychotic disorders	
Brief psychotic disorder	**≥1 days & <1 month**, sudden onset, full return to function
Schizophreniform disorder	**≥1 months & <6 months**, same symptoms as schizophrenia, functional decline not required
Schizophrenia	**≥6 months** (includes ≥1 months of active symptoms, can include prodromal & residual periods), requires functional decline
Schizoaffective disorder	Mood episode with concurrent active-phase symptoms of schizophrenia + ≥2 weeks of delusions or hallucinations in the absence of prominent mood symptoms
Delusional disorder	**≥1 delusions & ≥1 months**, **no other psychotic symptoms**, normal functioning apart from direct impact of delusions

This patient's 2-month history of progressive social withdrawal, paranoid ideation, and auditory hallucinations suggests **schizophreniform disorder**. These patients exhibit the **same symptoms as** individuals with **schizophrenia** (delusions, hallucinations, disorganized speech and behavior, negative symptoms) but for a **shorter duration** (≥1 month and <6 months). Functional decline, although often present, is not required for diagnosis.

As with all psychotic disorders, diagnosis requires ruling out medical and substance-induced etiologies. Schizophreniform disorder is often a provisional diagnosis that requires longitudinal monitoring, as approximately two-thirds of patients with this disorder are eventually diagnosed with schizophrenia or schizoaffective disorder.

(Choice A) Adjustment disorder is characterized by increased anxiety, depressive symptoms, and/or disruptive behavior (eg, agitation, property destruction) that develops within 3 months of an identifiable stressor and lasts no more than 6 months after the stressor ends. Symptoms of acute psychosis are not present in patients with

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(Choice A) Adjustment disorder is characterized by increased anxiety, depressive symptoms, and/or disruptive behavior (eg, agitation, property destruction) that develops within 3 months of an identifiable stressor and lasts no more than 6 months after the stressor ends. Symptoms of acute psychosis are not present in patients with adjustment disorder.

(Choices B and E) This patient's symptom duration of 2 months rules out these disorders. In brief psychotic disorder, psychotic symptoms last at least 1 day but <1 month, with full return to premorbid functioning. A diagnosis of schizophrenia requires symptom duration of ≥6 months.

(Choice C) In delusional disorder, other psychotic symptoms (eg, hallucinations, disorganized speech and behavior) are not present, behavior is not obviously bizarre, and functioning is not markedly impaired apart from the impact of the delusion.

(Choice D) There are insufficient symptoms to diagnose a major depressive episode. This patient's social withdrawal is a negative symptom characteristic of psychosis, and his appetite disturbance is due to the paranoid delusions about food being poisoned.

Educational objective:
Schizophreniform disorder is characterized by psychotic symptoms (delusions, hallucinations, disorganized speech and behavior, negative symptoms) lasting ≥1 month and <6 months.

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A 48-year-old woman with major depressive disorder is brought to the emergency department by her husband. The patient is severely depressed; she says she wants to die and has a plan to hang herself. She has no energy or appetite and has lost 5.4 kg (12 lb) over the past month. The patient has difficulty falling asleep and awakens at 4:00 AM each morning. Over the past week, she has heard a voice saying that she is evil and doesn't deserve to live. In the hospital, she seldom speaks and refuses to eat and drink. Which of the following would provide the most rapid improvement of this patient's symptoms?

- A. Antipsychotic therapy
- B. Electroconvulsive therapy
- C. Lithium
- D. Monoamine oxidase inhibitor
- E. Psychotherapy
- F. Selective serotonin reuptake inhibitor
- G. Tricyclic antidepressant

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- A. Antipsychotic therapy (29%)
- ✓ B. Electroconvulsive therapy (46%)
- C. Lithium (7%)
- D. Monoamine oxidase inhibitor (2%)
- E. Psychotherapy (1%)
- F. Selective serotonin reuptake inhibitor (7%)
- G. Tricyclic antidepressant (4%)

Correct

46%
Answered correctly

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Time Spent

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Explanation

This patient's severely depressed mood, low energy, sleep and appetite disturbances, weight loss, **suicidal** ideation, and auditory hallucinations are consistent with major depressive disorder with psychotic features. First-line treatment of **psychotic depression** consists of either the combination of an antidepressant and antipsychotic

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Explanation

This patient's severely depressed mood, low energy, sleep and appetite disturbances, weight loss, **suicidal** ideation, and auditory hallucinations are consistent with major depressive disorder with psychotic features. First-line treatment of **psychotic depression** consists of either the combination of an antidepressant and antipsychotic or **electroconvulsive therapy** (ECT).

ECT uses a small electric current to produce a generalized tonic-clonic seizure under anesthesia. Although its exact mechanism of action is unknown, ECT is a safe and effective treatment that achieves a more **rapid response** than pharmacotherapy in severely depressed patients who are suicidal or psychotic.

(Choice A) Antipsychotic therapy is used in the treatment of psychotic disorders and bipolar disorder. Antipsychotics can also be used in combination with antidepressants to treat major depression with psychotic features, but the response is generally slower compared with ECT.

(Choice C) Lithium is a mood stabilizer used primarily in bipolar disorder.

(Choices D, F, and G) Antidepressants do not work as fast as ECT and may take up to 6 weeks for response. They also must be combined with an antipsychotic medication to effectively treat major depression with psychotic features.

(Choice E) Psychotherapy alone is indicated for milder forms of depression, and this severely depressed patient would have difficulty engaging in conversation. It would not be sufficient due to the severity of depression, presence of psychotic features, and need for rapid response.

Educational objective:
Electroconvulsive therapy is a first-line treatment for major depressive disorder with psychotic features. It is appropriate for severely depressed patients who require rapid intervention (eg, suicidal).

References

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An 82-year-old man is brought to the office by his daughter due to behavioral changes. She reports that over the past year her father has become increasingly paranoid and frequently talks out loud as if in conversation when no one else is present. The daughter says, "During a recent argument, he accused me of being an imposter and stealing his personal items. Also, he used to be very clean, but his personal hygiene has gotten really bad. He also stopped watching baseball, which used to be his favorite hobby." The patient's medical history is significant for hypertension, hypercholesterolemia, and type 2 diabetes mellitus. Medications include lisinopril, simvastatin, and metformin. The patient has been unable to live independently for the past 2 years due to increasing forgetfulness and an inability to perform self-care. Vital signs are stable, and physical examination and laboratory evaluation are unremarkable. Which of the following is the most likely explanation for this patient's behavior?

- A. Alzheimer disease
- B. Delusional disorder
- C. Major depression with psychotic features
- D. Schizophrenia
- E. Medication-induced psychotic disorder

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- ✓ A. Alzheimer disease (66%)
- ✗ B. Delusional disorder (3%)
- C. Major depression with psychotic features (12%)
- D. Schizophrenia (15%)
- E. Medication-induced psychotic disorder (2%)

Incorrect
Correct answer
A

66%
Answered correctly

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Time Spent

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Explanation

This patient's 2-year history of increasing **forgetfulness** and **functional impairment**, followed by the development of psychotic symptoms (eg, delusions, hallucinations), is most likely explained by **Alzheimer disease** (AD). AD is the most common type of dementia, characterized by insidious onset (typically age ≥65), early impairment of

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This patient's 2-year history of increasing **forgetfulness** and **functional impairment**, followed by the development of psychotic symptoms (eg, delusions, hallucinations), is most likely explained by **Alzheimer disease** (AD). AD is the most common type of dementia, characterized by insidious onset (typically age >65), early impairment of recent memory, executive dysfunction, and visuospatial deficits.

As AD progresses, it is commonly complicated by the development of **neuropsychiatric symptoms**, such as apathy, depressive symptoms, **delusions**, **hallucinations**, disinhibition, and agitation. Delusions with paranoid themes (eg, items being stolen, family members replaced by imposters [ie, Capgras delusion]) are common. Behavioral symptoms tend to become more common and problematic as the severity of AD worsens.

(Choices B and D) Delusional disorder is characterized by one or more delusions in the absence of other psychotic symptoms (eg, hallucinations). Schizophrenia typically presents in young adulthood and is characterized by psychotic symptoms (eg, delusions, hallucinations, disorganized speech and behavior, negative symptoms) with associated functional decline lasting ≥6 months. These primary psychotic disorders are not diagnosed when psychotic symptoms are better explained by a medical condition, such as progressive dementia.

(Choice C) Major depression with psychotic features is a subtype of major depressive disorder characterized by very severe depressive symptoms and delusions and/or hallucinations consistent with depressive themes (eg, guilt, worthlessness). This patient has insufficient depressive symptoms to diagnose an episode of major depressive disorder; his apathy and deterioration in personal hygiene are consistent with AD.

(Choice E) Some medications (eg, corticosteroids, dopamine agonists) can induce psychotic symptoms and should be considered in the differential diagnosis of new-onset psychotic symptoms. This patient's medications are not known to induce psychosis, and his symptoms are better explained by AD.

Educational objective:
Psychotic symptoms (eg, delusions, hallucinations) are common in Alzheimer disease and increase with the severity of illness.

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Exhibit Display

Major depressive disorder	

Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure):
	  ◦ Depressed mood
	  ◦ Loss of interest or pleasure
	  ◦ Change in appetite or weight
	  ◦ Insomnia or hypersomnia
	  ◦ Psychomotor retardation or agitation
	  ◦ Low energy
	  ◦ Poor concentration or indecisiveness
	  ◦ Thoughts of worthlessness or inappropriate guilt
	  ◦ Recurrent thoughts of death or suicide
	• No history of mania or hypomania
	• Not due to substances or another medical condition

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A 5-year-old boy is brought to the office by his mother for a checkup. He is healthy and about to start kindergarten. His mother is concerned about his recent reaction to her brother's death. "Although I told him that Uncle John died and can't be with us anymore, he insists that he is coming for his birthday and will take him to a ballgame. He died over 3 months ago, but my son repeatedly asks me when he is coming back. When I try to explain, he starts crying that his stomach hurts." Physical examination is normal. During the examination he tells the physician, "I try to clean up my toys before bedtime so mommy won't cry." Which of the following is the most likely explanation for the patient's behavior?

- A. Age-appropriate behavior
- B. Complicated grief reaction
- C. Developmental delay
- D. Post-traumatic stress disorder
- E. Regression
- F. Somatic symptom disorder

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- ✓ A. Age-appropriate behavior (74%)
- ✗ B. Complicated grief reaction (17%)
- C. Developmental delay (0%)
- D. Post-traumatic stress disorder (1%)
- E. Regression (2%)
- F. Somatic symptom disorder (3%)

Incorrect
Correct answer
A

74%
Answered correctly

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Time Spent

2023
Version

Explanation

Bereavement reactions in children depend on the child's age. **Preschool children** (age <6) may **not understand the finality of death** and can exhibit **magical thinking** in which they fully expect that a dead person can come back to life. Younger children may also attribute events or other's reactions to something they did wrong

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Bereavement reactions in children depend on the child's age. **Preschool children** (age <6) may **not understand the finality of death** and can exhibit **magical thinking** in which they fully expect that a dead person can come back to life. Younger children may also attribute events or other's reactions to something they did wrong due to an **egocentric** thought process (eg, this child believing that he causes his mother's crying). Death should be explained to them in concrete terms, and they should be reassured that other people's grief is not their fault.

(Choice B) This child's reactions are age-appropriate. Complicated grief (also known as persistent complex bereavement disorder) is characterized by prolonged grief, excessive yearning for the deceased, and inability to move on with life.

(Choice C) This boy's behavior (not understanding death) is appropriate for a 5-year-old; in contrast, children age ≥7 are typically aware that death is final.

(Choice D) Post-traumatic stress disorder requires exposure to a life-threatening event that continues to be reexperienced in the form of flashbacks and nightmares. In preschool children this can be manifested by repetitive play about the event, frightening nightmares, and mood or behavioral changes (eg, temper tantrums, separation anxiety).

(Choice E) Regression refers to returning to a former, less developed stage of development. It is often seen in response to traumatic or anxiety-provoking situations (eg, if this child started wetting the bed following a stressful event after having achieved continence previously).

(Choice F) Children commonly develop somatic symptoms as a nonverbal expression of psychological distress. This child is not excessively focused on his stomachaches to the extent of impairment, as would be seen in somatic symptom disorder.

Educational objective:
Preschool children have not developed an understanding of the finality of death, which typically occurs around age 7. They may have magical thoughts that death is temporary or reversible and believe that other people's grief is

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understand the finality of death and can exhibit **magical thinking** in which they fully expect that a dead person can come back to life. Younger children may also attribute events or other's reactions to something they did wrong due to an **egocentric** thought process (eg, this child believing that he causes his mother's crying). Death should be explained to them in concrete terms, and they should be reassured that other people's grief is not their fault.

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Educational objective:
Preschool children have not developed an understanding of the finality of death, which typically occurs around age 7. They may have magical thoughts that death is temporary or reversible and believe that other people's grief is their fault.

References

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A 19-year-old man comes to the office for evaluation of a hand injury. He says, "I was just minding my own business at work when this dog bit me." The patient recently started operating a dog-fighting club and adds that his "entrepreneurial skills" have made him "richer than a doctor." He has been fired from multiple jobs, most recently while working as a car salesman, due to getting into arguments with coworkers and being repeatedly late to shifts. The patient says, "I was only late a few times. Haven't you ever been late before, doc?" During middle school, he was recurrently truant and spent time at a juvenile detention center for tampering with his teacher's car brakes after failing a class. Which of the following is the most likely diagnosis?

- A. Antisocial personality disorder
- B. Borderline personality disorder
- C. Conduct disorder
- D. Disruptive mood dysregulation disorder
- E. Intermittent explosive disorder
- F. Narcissistic personality disorder
- G. Oppositional defiant disorder

Submit

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A 19-year-old man comes to the office for evaluation of a hand injury. He says, "I was just minding my own business at work when this dog bit me." The patient recently started operating a dog-fighting club and adds that his "entrepreneurial skills" have made him "richer than a doctor." He has been fired from multiple jobs, most recently while working as a car salesman, due to getting into arguments with coworkers and being repeatedly late to shifts. The patient says, "I was only late a few times. Haven't you ever been late before, doc?" During middle school, he was recurrently truant and spent time at a juvenile detention center for tampering with his teacher's car brakes after failing a class. Which of the following is the most likely diagnosis?

- ✓ A. Antisocial personality disorder (66%)
- B. Borderline personality disorder (3%)
- ✗ C. Conduct disorder (12%)
- D. Disruptive mood dysregulation disorder (1%)
- E. Intermittent explosive disorder (0%)
- F. Narcissistic personality disorder (7%)
- G. Oppositional defiant disorder (7%)

Incorrect
Correct answer
A

66%
Answered correctly

03 secs
Time Spent

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Explanation

Antisocial personality disorder	

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Antisocial personality disorder	
Clinical features	• Violates rights of others, social norms, laws • Impulsive, irritable, aggressive (fights, assaults) • Consistently irresponsible, lies, is deceitful • Lack of remorse • Age ≥18 • Evidence of conduct disorder before age 15
Differential diagnosis	• Borderline personality disorder (exploitative behaviors related to abandonment fears) • Conduct disorder (pattern of violating societal norms & rights of others; age <18) • Narcissistic personality disorder (no pattern of violence or criminal activity)

This patient's operation of an illegal dog-fighting ring, unstable employment history, irritability with coworkers, and repeated tardiness to work are most consistent with a diagnosis of **antisocial personality disorder** (ASPD). This disorder is characterized by a pattern of disregard for and **violation** of the **rights of others**, beginning by early adolescence and persisting into adulthood (**age ≥18** required for diagnosis). An essential feature for diagnosis of ASPD is evidence of **conduct disorder prior to age 15** (eg, this patient's history of truancy and vindictive behavior toward his teacher).

Individuals with ASPD display consistent **irresponsibility** along with **impulsivity** and irritability, which may result in **physical aggression**. Engagement in criminal activities (eg, theft, illegal occupations) and **lack of remorse** for transgressions are typical in this disorder.

(Choice B) Borderline personality disorder also consists of a pattern of impulsivity and manipulation. These

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(Choice B) Borderline personality disorder also consists of a pattern of impulsivity and manipulation. These individuals have marked emotional lability, tend to be less physically aggressive, and display exploitative behaviors that are often driven by abandonment fears as opposed to personal gain and/or profit.

(Choice C) When individuals with conduct disorder continue to display a pattern of violating the rights of others into adulthood (age ≥18), they are diagnosed with ASPD.

(Choice D) Disruptive mood dysregulation disorder is characterized by severe, persistent irritability in childhood, accompanied by frequent verbal and/or aggressive outbursts. This diagnosis is usually restricted to individuals age <18.

(Choice E) Intermittent explosive disorder also consists of recurrent impulsive and destructive outbursts, but they are neither premeditated nor related to achieving secondary gain (eg, profit, intimidation).

(Choice F) Although this patient exhibits some grandiosity, lack of empathy, and exploitative behaviors that are also characteristic of narcissistic personality disorder, these would not explain his lifelong pattern of involvement in violent and/or criminal activities.

(Choice G) Oppositional defiant disorder similarly consists of irritability and vindictiveness as well as a lack of

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(Choice G) Oppositional defiant disorder similarly consists of irritability and vindictiveness as well as a lack of personal accountability for behaviors. However, individuals with this disorder do not have a pattern of engaging in criminal activities.

Educational objective:
Antisocial personality disorder involves a pattern of violating the rights of others, engaging in unlawful behaviors (eg, physical aggression, illegal occupations), and lacking remorse for transgressions. Individuals must be age ≥18 for diagnosis and have a history of conduct disorder prior to age 15.

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A 79-year-old man is brought to the office by his wife for evaluation of memory impairment. The patient is a recently retired professor who began having memory problems a month ago. He has been forgetting to take his medication, has had difficulty remembering the names of his grandchildren, and has neglected to turn off the stove on more than one occasion. The patient used to enjoy reading and playing with his grandchildren but has recently stopped doing both of these activities. He also has difficulty staying asleep, low appetite, and decreased energy. The patient has hypertension and type 2 diabetes, for which he takes medications. He has a family history of Alzheimer disease. The patient says, "I just feel so worthless since retiring." Temperature is 36.7 C (98.1 F), blood pressure is 119/78 mm Hg, pulse is 74/min, and respirations are 14/min. Neurological examination reveals no focal deficits. Montreal Cognitive Assessment score is 23 (normal: ≥26/30). Which of the following is the most likely diagnosis?

- A. Alzheimer disease
- B. Dementia with Lewy bodies
- C. Depression-related cognitive impairment
- D. Frontotemporal dementia
- E. Normal aging
- F. Vascular dementia

Submit

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A 79-year-old man is brought to the office by his wife for evaluation of memory impairment. The patient is a recently retired professor who began having memory problems a month ago. He has been forgetting to take his medication, has had difficulty remembering the names of his grandchildren, and has neglected to turn off the stove on more than one occasion. The patient used to enjoy reading and playing with his grandchildren but has recently stopped doing both of these activities. He also has difficulty staying asleep, low appetite, and decreased energy. The patient has hypertension and type 2 diabetes, for which he takes medications. He has a family history of Alzheimer disease. The patient says, "I just feel so worthless since retiring." Temperature is 36.7 C (98.1 F), blood pressure is 119/78 mm Hg, pulse is 74/min, and respirations are 14/min. Neurological examination reveals no focal deficits. Montreal Cognitive Assessment score is 23 (normal: ≥26/30). Which of the following is the most likely diagnosis?

- A. Alzheimer disease (14%)
- ✗ B. Dementia with Lewy bodies (1%)
- ✓ C. Depression-related cognitive impairment (75%)
- D. Frontotemporal dementia (1%)
- E. Normal aging (4%)
- F. Vascular dementia (2%)

Incorrect
Correct answer
C

75%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

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Cognitive impairment in elderly patients	
Normal aging	• Slight decrease in fluid intelligence (ability to process new information quickly) • **Normal functioning** in all activities of daily living
Mild neurocognitive disorder (mild cognitive impairment)	• Mild decline in ≥1 cognitive domains • Normal functioning in all activities of daily living with compensation
Major neurocognitive disorder (dementia)	• Significant decline in ≥1 cognitive domains • **Irreversible** global cognitive impairment • Marked functional impairment • Chronic & progressive, months to years
Major depression	• **Reversible** mild-moderate cognitive impairment • Features of **depression** (mood, interest, energy) • Episodic, weeks to months

Cognitive impairment is a common symptom of **late-life depression**. Depression-related cognitive impairment (previously termed pseudodementia) refers to a syndrome of reversible cognitive impairment that can **mimic mild cognitive impairment** or dementia. This patient's acute development of cognitive impairment **coincident with depressive symptoms** of sleep disturbance, decreased appetite, low energy, feelings of worthlessness, and loss of interest is consistent with major depressive disorder (MDD).

Treatment of depression-related cognitive impairment consists of treating the underlying MDD with psychotherapy and/or pharmacotherapy. The cognitive and mood symptoms should **resolve with adequate treatment** of MDD. In contrast, the cognitive deficits in patients with dementia are irreversible and will gradually worsen despite treatment.

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	• Episodic, weeks to months

Cognitive impairment is a common symptom of **late-life depression**. Depression-related cognitive impairment (previously termed pseudodementia) refers to a syndrome of reversible cognitive impairment that can **mimic mild cognitive impairment** or dementia. This patient's acute development of cognitive impairment **coincident with depressive symptoms** of sleep disturbance, decreased appetite, low energy, feelings of worthlessness, and loss of interest is consistent with major depressive disorder (MDD).

Treatment of depression-related cognitive impairment consists of treating the underlying MDD with psychotherapy and/or pharmacotherapy. The cognitive and mood symptoms should **resolve with adequate treatment** of MDD. In contrast, the cognitive deficits in patients with dementia are irreversible and will gradually worsen despite treatment.

(Choices A, B, D, and F) Subtypes of dementia include Alzheimer disease (prominent early memory impairment), dementia with Lewy bodies (visual hallucinations, parkinsonism), frontotemporal dementia (early personality changes), and vascular dementia (stepwise neurological deficits, cerebrovascular disease). However, this patient's acute cognitive impairment (~1 month) in conjunction with his depressive symptoms makes MDD a more likely diagnosis.

(Choice E) Normal age-related cognitive changes may include difficulty remembering names and slowed processing speed. This patient's objective evidence of more global cognitive impairment on cognitive testing (abnormal Montreal Cognitive Assessment score) is not normal and represents depression-related cognitive impairment.

Educational objective:
Depression-related cognitive impairment refers to cognitive impairment that occurs in the context of major depressive disorder (MDD), which may be mistaken for mild cognitive impairment or dementia.

References

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- Episodic, weeks to months

Exhibit Display

Major depressive disorder	

Diagnosis	• ≥5 of the following symptoms lasting ≥2 weeks (at least one symptom must be either depressed mood or loss of interest/pleasure):
	  ◦ Depressed mood
	  ◦ Loss of interest or pleasure
	  ◦ Change in appetite or weight
	  ◦ Insomnia or hypersomnia
	  ◦ Psychomotor retardation or agitation
	  ◦ Low energy
	  ◦ Poor concentration or indecisiveness
	  ◦ Thoughts of worthlessness or inappropriate guilt
	  ◦ Recurrent thoughts of death or suicide
	• No history of mania or hypomania
	• Not due to substances or another medical condition

New | Existing | My Notebook

References

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A 28-year-old woman, gravida 1 para 1, comes to the office for a 6-week postpartum checkup following an uncomplicated delivery. The patient reports feeling increasingly fatigued and having little energy for the past few weeks. She feels very anxious about being a new mother and has been getting up multiple times at night to check on the baby when he is sleeping. She tends to skip meals and says, "I don't have time to sit and eat—I can't even find the time to shower." Although the baby is healthy and doing well, the patient berates herself for being a "terrible mother." She becomes tearful during the interview and says, "I don't know why I keep crying when I should be so happy." Physical examination is normal. The patient has no suicidal ideation or thoughts of harming the baby. Which of the following is the most likely diagnosis?

- A. Acute stress disorder
- B. Adjustment disorder
- C. Generalized anxiety disorder
- D. Normal postpartum reaction
- E. Postpartum depression

Submit

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- A. Acute stress disorder (1%)
- ✗ B. Adjustment disorder (7%)
- C. Generalized anxiety disorder (0%)
- D. Normal postpartum reaction (20%)
- ✓ E. Postpartum depression (70%)

Incorrect
Correct answer
E

70%
Answered correctly

10 mins, 27 secs
Time Spent

2023
Version

Explanation

Postpartum blues, depression & psychosis			
	Postpartum blues	Postpartum depression	Postpartum psychosis
[illegible]	[illegible]	[illegible]	[illegible]

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Postpartum blues, depression & psychosis			
	Postpartum blues	**Postpartum depression**	**Postpartum psychosis**
Prevalence	• 40%-80%	• 8%-15%	• 0.1%-0.2%
Onset	• 2-3 days (resolves within 14 days)	• Typically within 4-6 weeks (can be up to 1 year)	• Days to weeks
Symptoms	• Mild depression, tearfulness, irritability	• ≥2 weeks of moderate to severe depression, sleep, or appetite disturbance; low energy; psychomotor changes; guilt; concentration difficulty; suicidal ideation	• Delusions, hallucinations, thought disorganization, bizarre behavior

This patient's persistent depressive symptoms at her 6-week postpartum visit (increasing fatigue/low energy, depressed mood/frequent tearfulness, sleep disturbance, poor appetite, feelings of worthlessness) are concerning for **postpartum depression** (PPD). PPD is diagnosed using the **same diagnostic criteria** used to diagnose a **major depressive episode** (≥2 weeks of at least 5 of 9 symptoms that include **depressed mood** plus **SIGECAPS**: **S**leep disturbance, loss of **I**nterest, **G**uilt/worthlessness, low **E**nergy, impaired **C**oncentration, change in **A**ppetite, **P**sychomotor retardation or agitation, and **S**uicidal thoughts). PPD is common, and all patients should be screened for postpartum depression at the 6-week postpartum visit. Untreated postpartum depression is associated with impaired maternal-infant bonding and negatively impacts both maternal and infant health.

(Choice A) In acute stress disorder, exposure to a life-threatening trauma results in symptoms of reexperiencing (ie, intrusive memories, flashbacks), avoidance of reminders, negative mood, dissociation, and hyperarousal. This patient had an uncomplicated delivery, and her symptoms are more consistent with a major depressive episode.

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(Choice A) In acute stress disorder, exposure to a life-threatening trauma results in symptoms of reexperiencing (ie, intrusive memories, flashbacks), avoidance of reminders, negative mood, dissociation, and hyperarousal. This patient had an uncomplicated delivery, and her symptoms are more consistent with a major depressive episode.

(Choice B) Although being a new parent is a significant stressor, adjustment disorder is diagnosed only if symptoms do not meet the criteria for another specific disorder, such as major depressive disorder.

(Choice C) This patient's anxiety revolves around her ability to parent and is a common feature of patients with PPD. Generalized anxiety disorder is characterized by pervasive anxiety about multiple issues lasting ≥6 months.

(Choice D) Mild sadness and anxiety are commonly experienced by mothers in response to the stress of taking care of a newborn (ie, postpartum blues). This normal and self-limited response typically peaks at 5 days postpartum and resolves within 2 weeks. However, this patient's symptoms have persisted beyond 2 weeks and are sufficient in number and severity to diagnose major depression.

Educational objective:
Postpartum depression is diagnosed using the same diagnostic criteria used for major depressive episodes that occur outside the postpartum period. It should be differentiated from postpartum blues, which is a milder and self-limited form of depression that peaks at 5 days and resolves within 2 weeks.

References

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A 16-year-old girl is brought to the office by her mother due to nonspecific stomachaches and pains. She has no other medical history. The patient has missed more than 10 days of school due to the symptoms since the academic year started 6 months ago. The mother says that her daughter has always been anxious with a "sensitive stomach," but the symptoms have worsened since the patient's best friend moved away a month ago. She has a few other friends but prefers to stay home and does not participate in after-school activities. The mother says, "She worried for weeks about going to a party. On the night of the party she had an anxiety attack and started hyperventilating. She ended up not going to the party at all." The patient says she is "just very shy" and is afraid of being embarrassed or "looking stupid" around others. Physical examination shows no abnormalities. During the interview, the patient makes little eye contact and gives brief answers to questions. Which of the following is the most likely diagnosis?

- A. Adjustment disorder with anxiety
- B. Agoraphobia
- C. Generalized anxiety disorder
- D. Normal shyness
- E. Panic disorder
- F. Social anxiety disorder
- G. Somatic symptom disorder

Submit

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- A. Adjustment disorder with anxiety (7%)
- ✗ B. Agoraphobia (2%)
- C. Generalized anxiety disorder (4%)
- D. Normal shyness (1%)
- E. Panic disorder (1%)
- ✓ F. Social anxiety disorder (77%)
- G. Somatic symptom disorder (3%)

Incorrect
Correct answer
F

77%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

https://t.me/USMLEWorldStep1

Social anxiety disorder (social phobia)	
Diagnosis	• Marked anxiety about ≥1 social situations for ≥6 months • Fear of scrutiny by others, humiliation, embarrassment • Social situations avoided or endured with intense distress • Marked impairment (social, academic, occupational) • Subtype specifier: performance only
Treatment	• SSRI/SNRI • Cognitive-behavioral therapy • Beta blocker or benzodiazepine for performance-only subtype
SNRI = serotonin-norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor.	

This patient's intense social anxiety, in which she **fears embarrassment** and **scrutiny** by others, is characteristic of **social anxiety disorder (social phobia)**. It is a common psychiatric disorder with typical **onset** in **adolescence** that can result in significant impairment in functioning and quality of life. Social interactions with peers and meeting new people cause significant distress. Anticipatory anxiety weeks before a social event and **avoidance** (not going to parties, school refusal) are common.

Patients with social anxiety disorder frequently appear ill at ease during the interview, avoid eye contact, give overly brief responses, and may exhibit physical manifestations of anxiety (eg, blushing, sweating, trembling, tachycardia). The specifier "performance-only" is given to patients who have symptoms only in performance situations (eg, speaking or performing in public).

(Choice A) This patient's social anxiety predates the stressor of her friend moving away. Stressors often exacerbate symptoms of other disorders. Adjustment disorder is not diagnosed when symptoms meet criteria for another disorder.

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This patient's intense social anxiety, in which she **fears embarrassment** and **scrutiny** by others, is characteristic of **social anxiety disorder (social phobia)**. It is a common psychiatric disorder with typical **onset** in **adolescence** that can result in significant impairment in functioning and quality of life. Social interactions with peers and meeting new people cause significant distress. Anticipatory anxiety weeks before a social event and **avoidance** (not going to parties, school refusal) are common.

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(Choice A) This patient's social anxiety predates the stressor of her friend moving away. Stressors often exacerbate symptoms of other disorders. Adjustment disorder is not diagnosed when symptoms meet criteria for another disorder.

(Choice B) Individuals with agoraphobia avoid public situations (eg, movie theaters) as escape might be difficult or help might not be available if they are incapacitated or have panic like symptoms. Although individuals with social anxiety disorder may avoid leaving the house, this is primarily due to fear of embarrassment and scrutiny by others.

(Choice C) This patient's anxiety is restricted to social situations, whereas generalized anxiety is characterized by multiple worries.

(Choice D) Shyness is a common nonpathological personality trait. However, this patient's severe and pervasive anxiety is out of proportion to the actual threat posed by social situations. It is causing significant distress and functional impairment in both academic and social contexts.

(Choice E) Patients with social anxiety disorder may have panic attacks related to social situations. In panic disorder, however, attacks are unexpected and there is no clear trigger.

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(Choice E) Patients with social anxiety disorder may have panic attacks related to social situations. In panic disorder, however, attacks are unexpected and there is no clear trigger.

(Choice G) Patients with anxiety disorders often present with somatic symptoms. This patient's stomachaches are a physical manifestation of her anxiety. She does not exhibit the excessive preoccupation with physical symptoms that characterizes somatic symptom disorder.

Educational objective:
Social anxiety disorder involves excessive fear of scrutiny or embarrassment in social or performance situations, resulting in significant distress and functional impairment.

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A 35-year-old man comes to the office due to problems with irritability, anxiety, and low self-esteem. He was recently fired due to poor work performance at his data entry job and worries about finding a new job and supporting himself. The patient is currently in a relationship but mentions that his girlfriend is upset by his frequent lateness and forgetfulness and has threatened to leave him. Further history indicates that his problems are long-standing and date back to childhood when he had behavioral problems in school. The patient frequently feels overwhelmed due to being disorganized. He frequently procrastinates, is bored easily at work, and jumps to another project before completing what he is working on. The patient drinks 3 or 4 beers a week and smokes marijuana twice a month. On mental status examination, he is cooperative and talkative but appears tense, restless, and easily distracted. Which of the following is the most likely diagnosis in this patient?

- A. Adjustment disorder
- B. Attention-deficit hyperactivity disorder
- C. Bipolar disorder
- D. Borderline personality disorder
- E. Generalized anxiety disorder
- F. Persistent depressive disorder
- G. Substance-induced mood disorder

Submit

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- A. Adjustment disorder (1%)
- ✓ B. Attention-deficit hyperactivity disorder (84%)
- ✗ C. Bipolar disorder (1%)
- D. Borderline personality disorder (3%)
- E. Generalized anxiety disorder (5%)
- F. Persistent depressive disorder (2%)
- G. Substance-induced mood disorder (1%)

Incorrect
Correct answer
B

84%
Answered correctly

22 secs
Time Spent

2023
Version

Explanation

https://t.me/USMLEWorldStep1

Attention deficit hyperactivity disorder	
Clinical features	• Inattentive &/or hyperactive/impulsive symptoms for ≥6 months ◦ **Inattentive symptoms:** difficulty focusing, distractible, does not listen or follow instructions, disorganized, forgetful, loses/misplaces objects ◦ **Hyperactive/impulsive symptoms:** fidgety, unable to sit still, "driven by a motor," hyper-talkative, interrupts, blurts out answers • Several symptoms present before age 12; may persist to adulthood • Symptoms occur in at least 2 settings (home, school) & cause functional impairment
Treatment	• Stimulants (methylphenidate, amphetamines) • Behavioral therapy

This patient's disorganization, forgetfulness, excessive procrastination, difficulty completing tasks, irritability, restlessness, and distractibility are suggestive of adult **attention-deficit hyperactivity disorder** (ADHD). Evidence of behavioral problems since childhood (some symptoms prior to age 12 are required) and the chronic nature of his difficulties further support this diagnosis. **ADHD frequently persists** into **adulthood** and may go unrecognized or misdiagnosed as an anxiety, mood, or personality disorder.

Although the same diagnostic criteria are used, adults with ADHD are **less overtly hyperactive** compared to children. They typically experience a sense of inner restlessness, irritability, impulsive speech, and decision making and executive skills dysfunction (eg, difficulties in organizing/prioritizing tasks, lack of follow-through, forgetfulness, poor time management) that can result in significant social and occupational impairment (eg, unemployment, reduced productivity, relationship difficulties). Stimulant medication is the first-line treatment for adult ADHD.

(Choice A) Adjustment disorder is diagnosed when symptoms occur in response to a stressor and do not meet the criteria for another mental disorder. This patient's symptoms and impairment are long-standing and are likely the

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forgetfulness, poor time management) that can result in significant social and occupational impairment (eg, unemployment, reduced productivity, relationship difficulties). Stimulant medication is the first-line treatment for adult ADHD.

(Choice A) Adjustment disorder is diagnosed when symptoms occur in response to a stressor and do not meet the criteria for another mental disorder. This patient's symptoms and impairment are long-standing and are likely the cause of his employment and relationship difficulties.

(Choice C) Bipolar disorder is differentiated from ADHD in adults by an episodic course consisting of discrete periods of severe manic or depressive symptoms. Although mood instability, impulsivity, restlessness, and talkativeness are seen in both disorders, this patient has a chronic (not episodic) course and lacks other bipolar symptoms.

(Choice D) Patients with borderline personality disorder also exhibit emotional dysregulation and impulsivity, but this patient lacks the identity disturbance and recurrent suicidal behaviors that characterize this disorder.

(Choice E) Generalized anxiety disorder involves excessive anxiety about multiple issues. This patient's anxiety is related to realistic worries about his job situation.

(Choice F) Patients with ADHD often struggle with poor self-esteem due to years of underachievement and may experience comorbid depression. However, this patient does not have sufficient depressive symptoms to diagnose persistent depressive disorder.

(Choice G) The amount and extent of this patient's alcohol and marijuana use are insufficient to explain his symptoms and lifelong impairment.

Educational objective:
Attention-deficit hyperactivity disorder (ADHD) often persists into adulthood. Adults with ADHD are less overtly hyperactive but experience chronic problems with distractibility, disorganization, and impulsivity that cause significant social and occupational impairment.

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A 72-year-old, previously healthy man is brought to the office by his wife due to unusual movements and behavior during sleep that have occurred with increasing frequency over the past 3 months. She says, "Lately, he's been waking me up in the middle of the night, moaning and thrashing around like he's having a bad dream. Sometimes, he becomes so violent in his sleep that he'll kick and punch me. I can easily wake him up, but he's often confused for a few seconds. Then he usually describes a dream in which he was defending himself from an attack." Physical examination is unremarkable. Neurodegeneration due to accumulation of which of the following is the most likely etiology of this patient's condition?

- A. Alpha-synuclein
- B. Amyloid beta peptide
- C. Prion proteins
- D. Tau proteins
- E. TAR DNA-binding protein-43

Submit

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- ✓ A. Alpha-synuclein (44%)
- ✗ B. Amyloid beta peptide (11%)
- C. Prion proteins (8%)
- D. Tau proteins (15%)
- E. TAR DNA-binding protein-43 (19%)

Incorrect
Correct answer
A

44%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

This patient's repeated nocturnal episodes of complex motor behaviors that reflect dream enactment are consistent with **REM sleep behavior disorder (RBD)**. RBD is a parasomnia characterized by **dream enactment** that occurs because the **muscle atonia** usually accompanying REM sleep is **absent** or incomplete. When awakened, patients may be transiently confused but very quickly become fully alert. They may not recall their movements during sleep but can frequently remember their dreams.

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RBD is more likely to occur in **men age >50** and is strongly associated with **alpha-synuclein neurodegenerative disorders**. Alpha-synuclein is a synaptic protein that accumulates in neurodegenerative conditions such as **Parkinson disease**, dementia with Lewy bodies, and multiple system atrophy. Spontaneous (ie, not associated with medications) RBD is considered a prodromal syndrome of alpha-synuclein neurodegeneration because up to 90% of patients with idiopathic RBD eventually develop one of these conditions.

(Choices B and D) Extracellular accumulation of beta-amyloid and/or tau proteins occurs in Alzheimer dementia, which typically presents with early and prominent memory impairment with language deficits and spatial disorientation. Although sleep disturbances commonly occur in patients with Alzheimer dementia, they usually impact sleep initiation and continuity and occur later in the disease process.

(Choice C) Excessive accumulation of misfolded, infectious proteins (ie, prions) causes Creutzfeldt-Jakob disease, a fatal disease that most commonly presents with rapid mental deterioration, behavioral abnormalities, and myoclonus.

(Choice E) Accumulation of abnormally ubiquitinated TAR DNA-binding protein-43 (TDP-43), which normally functions as a transcription inhibitor and DNA repair protein, is associated with both amyotrophic lateral sclerosis and frontotemporal dementia. Patients with amyotrophic lateral sclerosis frequently have sleep difficulty, which is usually related to an inability to change position due to muscle weakness, pain due to muscle cramps, and comorbid anxiety.

Educational objective:

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Educational objective:
REM sleep behavior disorder (RBD) is a parasomnia characterized by dream-enactment behaviors due to a loss of atonia during REM sleep. Most patients with idiopathic RBD eventually develop a disorder of alpha-synuclein neurodegeneration, most commonly Parkinson disease.

https://t.me/USMLEWorldStep1

A 40-year-old woman comes to the office due to lesions on her left arm. She developed small, red sores a few weeks ago, and over the past few days, they have increased in number. The patient is very concerned that they will cause an infection because she has had similar lesions on her extremities many times in the past; wound cultures have consistently grown *Escherichia coli*. Most recently, she developed cellulitis 8 months ago and required intravenous antibiotics. The patient says, "I don't know why my skin keeps getting infected. I've been to so many doctors, and none of them can tell me what's going on." She lives alone and works as a traveling nurse. Medical history is otherwise noncontributory. Which of the following is most characteristic of this patient's condition?

- A. Fear of humiliation and rejection by others
- B. Frantic efforts to avoid abandonment
- C. Intentional self-injury to induce illness
- D. Persistently high level of anxiety about health
- E. Preoccupation with being unable to function independently

Submit

https://t.me/USMLEWorldStep1

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- A. Fear of humiliation and rejection by others (2%)
- ✗ B. Frantic efforts to avoid abandonment (3%)
- ✓ C. Intentional self-injury to induce illness (58%)
- D. Persistently high level of anxiety about health (32%)
- E. Preoccupation with being unable to function independently (2%)

Incorrect
Correct answer
C

58%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Factitious disorder—key features & differential diagnosis	
Factitious disorder	• Intentional falsification of symptoms/inducing injury • External rewards absent; goal is to assume the patient role

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Factitious disorder—key features & differential diagnosis	
Factitious disorder	• Intentional falsification of symptoms/inducing injury • External rewards absent; goal is to assume the patient role
Malingering	• Intentional falsification with obvious external rewards (financial benefits, housing, medications)
Personality disorders	• Enduring patterns of maladaptive interpersonal behavior that may include deliberate self-harm (borderline) & desire to be taken care of (dependent) but do not involve intentional deception
Somatic symptom disorders	• Excessive illness anxiety/preoccupation with somatic symptoms & treatment seeking; no intention to deceive

Recurrent skin infections of the extremities due to *Escherichia coli* in an otherwise healthy patient are suggestive of **factitious disorder**, a condition in which the patient **intentionally induces injury** or **falsifies illness**. Behaviors of factitious disorder may include deceptive reporting of symptoms, manipulating laboratory samples, and ingesting or injecting medications or contaminants to induce illness, such as this patient deliberately infecting her skin.

Factitious disorder may be more likely to occur in health care workers and has been associated with a desire for attention. High health care utilization is typical of these patients who repeatedly seek out medical care to gratify psychological needs. In factitious disorder, the **goal is to assume the patient role** and there is **no obvious external reward**. In contrast, malingering is characterized by deception to receive an external gain (eg, financial benefits, housing, medications).

(Choice A) Fear of humiliation and rejection is a key feature of social anxiety disorder, a common disorder characterized by excessive social anxiety, fears of scrutiny and embarrassment, and social avoidance. This patient seeks out attention and shows signs of intentionally falsifying illness, which are more consistent with factitious disorder

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(Choice B) Frantic efforts to avoid abandonment is a characteristic feature of borderline personality disorder (BPD). Although deliberate self-harm can be seen in both BPD and factitious disorder, this patient engages in self-injurious behavior with the intention to deceive others, not to express anger and frustration in response to unstable relationships and affective reactivity, as seen in BPD.

(Choice D) A persistently high level of health anxiety is a core symptom of illness anxiety disorder, which can also lead to high health care utilization in these patients who repeatedly seek reassurance about a feared illness. However, this patient does not fear illness but rather has intentionally induced her illness with the goal of assuming the patient role.

(Choice E) A preoccupation with an inability to function independently is a feature of dependent personality disorder. Although both factitious disorder and dependent personality disorder are characterized by a desire to be cared for by others, patients with factitious disorder intentionally fabricate symptoms to achieve this goal.

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Factitious disorder may be more likely to occur in health care workers and has been associated with a desire for attention. High health care utilization is typical of these patients who repeatedly seek out medical care to gratify psychological needs. In factitious disorder, the **goal is to assume the patient role** and there is **no obvious external reward**. In contrast, malingering is characterized by deception to receive an external gain (eg, financial benefits, housing, medications).

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(Choice E) A preoccupation with an inability to function independently is a feature of dependent personality disorder. Although both factitious disorder and dependent personality disorder are characterized by a desire to be cared for by others, patients with factitious disorder intentionally fabricate symptoms to achieve this goal.

Educational objective:
Factitious disorder is characterized by the intentional falsification of symptoms or induction of illness. In factitious disorder, the goal is to assume the patient role, and there is no obvious external reward.

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A 40-year-old woman comes to the office due to worsening anxiety and insomnia over the past 3 months. She says, "I'm really worried that something is wrong with me. I was never a particularly anxious person, but now I feel anxious all the time. Sometimes I feel panicky for no reason; my heart races and I break out in a sweat. The only benefit is that I have lost 5 pounds (2.3 kg) without even trying." The patient has no significant medical or psychiatric history. She drinks 2-3 glasses of wine per week and does not smoke or use illicit drugs. Blood pressure is 130/90 mm Hg and pulse is 112/min. On physical examination, the patient is restless and has warm, moist skin and mild hand tremor bilaterally. Mental status examination is notable for a frightened stare, anxious mood, and rapid speech. Which of the following is the most likely diagnosis?

- A. Alcohol withdrawal
- B. Anxiety caused by a medical condition
- C. Generalized anxiety disorder
- D. Illness anxiety disorder
- E. Panic disorder
- F. Somatic symptom disorder

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- A. Alcohol withdrawal (1%)
- ✓ B. Anxiety caused by a medical condition (57%)
- C. Generalized anxiety disorder (18%)
- D. Illness anxiety disorder (4%)
- E. Panic disorder (15%)
- F. Somatic symptom disorder (3%)

Correct

57% Answered correctly

03 secs Time Spent

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Explanation

Anxiety and insomnia are nonspecific symptoms that can be due to a variety of medical and psychiatric disorders. Diagnosis of **primary anxiety disorders** requires **ruling out medical illness** and substance-induced etiologies

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Anxiety and insomnia are nonspecific symptoms that can be due to a variety of medical and psychiatric disorders. Diagnosis of **primary anxiety disorders** requires **ruling out medical illness** and substance-induced etiologies (due to medications, drugs of abuse, or toxins). Chronic anxiety and insomnia (as seen in generalized anxiety disorder) and panic attacks (as seen in panic disorder) can be symptoms of a medical illness or **substance intoxication or withdrawal**.

The new onset of anxiety in this patient with no psychiatric history and **prominent physical findings** on examination suggests that anxiety is more likely due to another medical condition (ie, the anxiety is a direct physiological effect of the medical condition) than to a primary anxiety disorder. Specifically, this patient's weight loss without trying; tachycardia; warm, moist skin; tremor; frightened stare (possible eyelid retraction); and restlessness are consistent with **hyperthyroidism**. Other medical conditions known to present with anxiety symptoms include hypoglycemia, pheochromocytoma, hypercortisolism, and cardiac arrhythmias. Common substance-induced etiologies include sympathomimetic drugs, caffeine, stimulant intoxication, and alcohol and sedative-hypnotic withdrawal.

(Choice A) Alcohol withdrawal can present with anxiety, insomnia, tremulousness, palpitations, and diaphoresis. However, the extent of this patient's alcohol use would not result in dependence and withdrawal.

(Choices C and E) Primary anxiety disorders should not be diagnosed when anxiety symptoms are caused by a medical condition. Generalized anxiety disorder is characterized by excessive, uncontrollable worry about multiple issues. Symptoms must persist for at least 6 months, whereas this patient's symptoms have lasted only 3 months. Panic disorder involves recurrent, unexpected panic attacks.

(Choices D and F) These disorders involve either having a serious undiagnosed medical illness (illness anxiety disorder) or excessive preoccupation with one or more somatic symptoms (somatic symptom disorder). They would not be diagnosed in this patient, who has legitimate concerns about symptoms that have not yet been evaluated.

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disorder) and panic attacks (as seen in panic disorder) can be symptoms of a medical illness or **substance intoxication or withdrawal**.

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Educational objective:
The differential diagnosis of anxiety includes medical conditions and substance-induced etiologies (eg, intoxication, withdrawal). Primary anxiety disorders are not diagnosed when anxiety is caused by the physiological effects of a medical condition (eg, hyperthyroidism) or drug.

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A 39-year-old woman is brought to the emergency department after her husband found her confused. The patient was unable to answer questions about why she did not go to work that day and could not remember the day of the week. She has a history of bipolar disorder and has taken the same dose of lithium for the past 10 years. Over the past week, the patient started taking several daily doses of a new medication following a dental extraction. Yesterday, she felt nauseated and vomited twice, and earlier today, she started having diarrhea. Vital signs are within normal limits. The patient is alert and oriented to self only. The abdomen is soft and nontender with increased bowel sounds. Coarse tremors are noted in the upper extremities. Deep tendon reflexes are 2+ in the bilateral extremities. Gait is mildly ataxic. A drug interaction involving which of the following medications is most likely causing this patient's symptoms?

- A. Acetaminophen
- B. Ibuprofen
- C. Ondansetron
- D. Prednisone
- E. Tramadol

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- A. Acetaminophen (13%)
- ✓ B. Ibuprofen (46%)
- C. Ondansetron (10%)
- D. Prednisone (2%)
- E. Tramadol (27%)

Correct

46% Answered correctly

04 secs Time Spent

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Explanation

Lithium toxicity	
	Acute toxicity

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Lithium toxicity	
Etiology	Acute toxicity • Intentional overdose Chronic toxicity • Decreased renal perfusion (↓ lithium clearance) ◦ Dehydration ◦ Thiazide diuretics, NSAIDs, ACE inhibitors
Clinical features	Acute toxicity • Gastrointestinal: nausea, vomiting, diarrhea • Late neurologic sequelae Chronic toxicity (neurologic) • Lethargy, confusion, agitation • Ataxia, tremor/fasciculations, seizure
Treatment	• Intravenous hydration • Hemodialysis (severe cases)
NSAID = nonsteroidal anti-inflammatory drug.	

Lithium, a mood stabilizer used to treat bipolar disorder, has a narrow therapeutic index and is excreted by the kidneys. As a result, drugs or medical conditions that affect kidney function or compete with lithium for clearance may interfere with lithium excretion and lead to toxicity. This patient's acute gastrointestinal upset followed by the development of neurologic symptoms (ie, confusion, coarse tremors, ataxia) is consistent with **lithium toxicity**.

The most likely cause of lithium toxicity in this patient is a **drug interaction** with a nonsteroidal anti-inflammatory drug (NSAID), such as ibuprofen. **NSAIDs** decrease renal blood flow and lithium clearance, increasing serum

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Treatment	• Intravenous hydration • Hemodialysis (severe cases)

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The most likely cause of lithium toxicity in this patient is a **drug interaction** with a nonsteroidal anti-inflammatory drug (NSAID), such as ibuprofen. **NSAIDs** decrease renal blood flow and lithium clearance, increasing serum lithium levels. Other drugs that increase lithium levels and the risk for toxicity include **thiazide diuretics**, **ACE inhibitors**, **tetracyclines**, and **metronidazole**. Lithium levels should be monitored closely in patients taking these medications.

(Choices A, C, and E) Acetaminophen, ondansetron (5-HT_3 antagonist), and tramadol (opioid agonist) do not impair renal clearance of lithium and therefore are not associated with an increased risk for lithium toxicity.

(Choice D) Although prednisone can precipitate neuropsychiatric symptoms (eg, confusion, emotional lability, akathisia), it does not increase the risk for lithium toxicity because it does not interfere with kidney function or lithium clearance.

Educational objective:
Lithium toxicity can be caused by drug interactions with nonsteroidal anti-inflammatory drugs, thiazide diuretics, ACE inhibitors, tetracyclines, and metronidazole. Signs of lithium toxicity include confusion, ataxia, and tremor.

Pharmacology	Psychiatric/Behavioral & Substance Use Disorder	Lithium
Subject	System	Topic

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A 55-year-old man comes to the office for a checkup. His medical history is significant for major depression treated with sertraline for the past 4 months, hypertension controlled with lisinopril, and diabetes mellitus controlled with diet. He does not use tobacco and drinks a glass of wine with dinner a few times a week. Vital signs are all within normal limits, and no abnormalities are noted on physical examination. Hemoglobin A1c is within normal limits. Which of the following is the most likely side effect of the treatment prescribed for this patient's depression?

- A. Cardiac arrhythmias
- B. Hypertensive crisis
- C. Orthostatic hypotension
- D. Seizures
- E. Serotonin syndrome
- F. Sexual dysfunction
- G. Urinary hesitancy
- H. Weight gain

Submit

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- A. Cardiac arrhythmias (0%)
- B. Hypertensive crisis (2%)
- ✗ C. Orthostatic hypotension (1%)
- D. Seizures (0%)
- E. Serotonin syndrome (8%)
- ✓ F. Sexual dysfunction (74%)
- G. Urinary hesitancy (0%)
- H. Weight gain (10%)

Incorrect
Correct answer
F

74%
Answered correctly

56 secs
Time Spent

2023
Version

Explanation

Sertraline is one of the **selective serotonin reuptake inhibitors (SSRIs)** frequently used as **first-line antidepressant** therapy. Compared with older antidepressants (eg, tricyclic antidepressants [TCAs]), SSRIs have minimal activity at alpha-adrenergic, cholinergic, and histaminic receptors. They are generally more tolerable and

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Sertraline is one of the **selective serotonin reuptake inhibitors (SSRIs)** frequently used as **first-line antidepressant** therapy. Compared with older antidepressants (eg, tricyclic antidepressants [TCAs]), SSRIs have minimal activity at alpha-adrenergic, cholinergic, and histaminic receptors. They are generally more tolerable and significantly safer in overdose. However, SSRIs commonly cause **sexual dysfunction**, including decreased libido, decreased arousal, anorgasmia in women, and increased ejaculation latency in men. Sexual dysfunction can occur **in more than 50% of patients** receiving SSRIs and is a frequent cause of nonadherence. Physicians should routinely assess SSRI-treated patients for sexual dysfunction because some may be reluctant to discuss this side effect.

(Choice A) Although SSRIs can prolong the QT interval slightly, they are unlikely to cause arrhythmias when used in recommended doses in patients who lack other risk factors. Cardiac arrhythmias are a serious side effect of TCA overdose.

(Choice B) This patient's hypertension is well controlled. Hypertensive crisis is not associated with SSRIs but may occur if a patient taking a monoamine oxidase inhibitor (MAOI) ingests foods containing tyramine.

(Choices C and G) Orthostatic hypotension and urinary hesitancy are common side effects of TCAs due to their antagonism of alpha-adrenergic and cholinergic receptors. However, these side effects are rarely seen with SSRIs.

(Choices D and H) SSRIs are associated with a slightly increased risk of seizures and weight gain, but these effects are less common than sexual dysfunction. Seizures are more of a concern in patients taking TCAs and the norepinephrine-dopamine reuptake inhibitor bupropion.

(Choice E) Serotonin syndrome can occur if an SSRI is combined with another serotonergic agent, such as an MAOI, or an illicit serotonergic substance, such as MDMA. It would be uncommon in a patient taking a single serotonergic drug at a normal dosage.

Educational objective:

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Educational objective:
Selective serotonin reuptake inhibitors (SSRIs) have improved tolerability and a better side-effect profile compared with tricyclic antidepressants and monoamine oxidase inhibitors but are associated with sexual dysfunction. Physicians should routinely inquire about sexual dysfunction because it is a relatively common side effect of SSRIs that may lead to nonadherence.

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A 26-year-old woman comes to the emergency department to report that her life is in danger. The patient believes that transmitters inserted in her bedroom walls are broadcasting her thoughts to a central government agency that is now plotting to kill her. On mental status examination, she is fearful and paces the examining room. The patient makes poor eye contact with the examiner, and her responses are interrupted by frequent pauses during which she appears to talk back to a person who is not present. She has no medical history. The patient smokes a pack of cigarettes daily and does not use illicit drugs. Physical examination shows a thin, disheveled young woman but no abnormalities. She is hospitalized, improves with medication over the course of 2 weeks, and is discharged on olanzapine. At this patient's 3-month checkup, which of the following studies should be obtained?

- A. Blood urea nitrogen and creatinine
- B. Complete blood count
- C. Electrocardiogram
- D. Fasting glucose and lipid panel
- E. Prolactin level
- F. Thyroid function tests

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- A. Blood urea nitrogen and creatinine (4%)
- ✗ B. Complete blood count (19%)
- C. Electrocardiogram (4%)
- ✓ D. Fasting glucose and lipid panel (58%)
- E. Prolactin level (9%)
- F. Thyroid function tests (3%)

Incorrect
Correct answer
D

58%
Answered correctly

03 secs
Time Spent

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Explanation

Metabolic effects of second-generation antipsychotics	
	Weight gain

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Metabolic effects of second-generation antipsychotics	
Metabolic syndrome	• Weight gain • Dyslipidemia • Hyperglycemia (including new-onset diabetes mellitus)
Highest-risk drugs	• Clozapine • Olanzapine
Monitoring guidelines	Baseline & regular follow-up • BMI • Fasting glucose & lipids • Blood pressure • Waist circumference

Olanzapine is a **second-generation antipsychotic** (SGA) medication used to treat psychotic and mood disorders. SGAs are commonly used as first-line agents due to their lower risk of extrapyramidal side effects compared to first-generation antipsychotics. As a class, SGAs are associated with **metabolic adverse effects** (eg, weight gain, dyslipidemia, hyperglycemia, increased risk of diabetes) to varying degrees. Among the SGAs, **olanzapine** and **clozapine** carry the **greatest metabolic syndrome risk**. Patients taking SGAs require routine monitoring of metabolic parameters, including weight, waist circumference, blood pressure, **fasting glucose**, and **lipid profile**.

(Choices A and F) Blood urea nitrogen, creatinine, and thyroid function tests should be routinely monitored in patients taking the mood stabilizer lithium due to its potential to cause hypothyroidism and impair renal function. Treatment with olanzapine does not require routine monitoring of thyroid or renal function.

(Choice B) Olanzapine rarely causes neutropenia, and routine monitoring of complete blood counts is not required unless the patient has a history of drug-induced or baseline neutropenia. Clozapine is the only

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(Choice C) Routine ECG monitoring is not required with antipsychotic treatment unless the patient has known pre-existing cardiovascular risk factors (eg, long QT syndrome). Among SGAs, ziprasidone is most often associated with QT prolongation.

(Choice E) Although antipsychotics can cause prolactin elevation due to D2 receptor antagonism in the tuberoinfundibular pathway, prolactin levels are not routinely monitored unless the patient has symptoms of prolactin dysfunction (eg, galactorrhea, sexual impairment). Among SGAs, risperidone has been associated with a greater risk of prolactin elevation.

Educational objective:
As a class, second-generation antipsychotics are associated with metabolic adverse effects (eg, weight gain, dyslipidemia, hyperglycemia, increased risk of diabetes). Within the class, olanzapine and clozapine carry the

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Educational objective:
As a class, second-generation antipsychotics are associated with metabolic adverse effects (eg, weight gain, dyslipidemia, hyperglycemia, increased risk of diabetes). Within the class, olanzapine and clozapine carry the greatest risk.

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An 18-month-old girl is brought to the office by her parents due to concerns about her development. The girl squeals and babbles nonspecific sounds like "bababa." Last week, she started saying "mama" when she sees her mom. She points at objects that she wants and will retrieve an object when asked. The patient can use a spoon but often spills food and prefers to feed herself with her fingers. She walks independently and loves to climb. She often imitates her parents' actions such as holding a toy phone to her ear. During the visit, the child scribbles with a crayon and excitedly shows her father the drawing. The patient's mother says, "My daughter is such a happy child. I don't know why she won't speak more. Her sister had so many words by this age." Which of the following is the most appropriate response?

A. "Children develop at different rates, but I am concerned your child has a language delay."

B. "Every child is different; we will reevaluate her development in a few months."

C. "I am concerned your child may have selective mutism, which can be easily treated."

D. "I understand your concerns; her lack of speech is worrisome for autism spectrum disorder."

E. "There is no need to worry; your child's development is within the normal range."

Submit

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- ✓ A. "Children develop at different rates, but I am concerned your child has a language delay." (27%)
- ✗ B. "Every child is different; we will reevaluate her development in a few months." (38%)
- C. "I am concerned your child may have selective mutism, which can be easily treated." (1%)
- D. "I understand your concerns; her lack of speech is worrisome for autism spectrum disorder." (2%)
- E. "There is no need to worry; your child's development is within the normal range." (30%)

Incorrect
Correct answer
A

27%
Answered correctly

04 secs
Time Spent

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Explanation

Developmental milestones of toddlers				
Age	**Gross motor**	**Fine motor**	**Language**	**Social/cognitive**

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Developmental milestones of toddlers				
Age	**Gross motor**	**Fine motor**	**Language**	**Social/cognitive**
1 year	• Pulls to stand • Cruises	• Pincer grasp	• Says "mama" or "dada" • Understands "no"	• Plays "pat-a-cake" • Looks for hidden object
15 months	• Takes a few steps	• Stacks 2 blocks	• Says 1 or 2 words (plus "mama" & "dada")	• Follows 1-step command with gesture • Points to get something • Shows affection
18 months	• Walks easily • Climbs on/off chair	• Scribbles • Feeds with fingers	• Says ≥3 words (plus "mama" & "dada")	• Follows 1-step command without gesture • Imitates
2 years	• Runs • Kicks ball • Walks up stairs	• Uses spoon	• Says 2-word phrases	• Knows 2 body parts • Parallel play
30 months	• Jumps	• Removes clothes	• Says ≥50 words	• Follows 2-step command

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	• Cruises		• Understands "no"	• Looks for hidden object
15 months	• Takes a few steps	• Stacks 2 blocks	• Says 1 or 2 words (plus "mama" & "dada")	• Follows 1-step command with gesture • Points to get something • Shows affection
18 months	• Walks easily • Climbs on/off chair	• Scribbles • Feeds with fingers	• Says ≥3 words (plus "mama" & "dada")	• Follows 1-step command without gesture • Imitates
2 years	• Runs • Kicks ball • Walks up stairs	• Uses spoon	• Says 2-word phrases	• Knows 2 body parts • Parallel play
30 months	• Jumps	• Removes clothes • Turns pages	• Says ≥50 words	• Follows 2-step command • Knows 1 color
3 years	• Walks up stairs alternating feet • Rides tricycle	• Dresses with help • Uses fork • Copies circle	• Says ≥3-word sentences • Speech 75% intelligible	• Knows age/sex • Plays with other children

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3 years	• Walks up stairs alternating feet • Rides tricycle	• Dresses with help • Uses fork • Copies circle	sentences • Speech 75% intelligible	age/sex • Plays with other children

Developmental milestones are skills the majority of children achieve by a given age. At **age 18 months**, a child should be able to walk well, finger-feed, imitate others, and follow a 1-step command without a gesture (eg, retrieve an object when asked). An 18-month-old should also say **≥3 words** in addition to "mama" and "dada." This patient has appropriate motor and social skills but babbles and says only 1 word ("mama"); these findings are suggestive of an isolated **language delay (Choice E)**.

Language is the most commonly delayed developmental milestone, and any child with language delay should have an **audiology evaluation** to assess for hearing loss as a potential contributing factor. Infants and toddlers with developmental delays should also be referred for early intervention; although many children with isolated language delay will catch up in preschool, early initiation of **speech therapy** results in improved and more rapid acquisition of skills **(Choice B)**.

(Choice C) Selective mutism is a failure to speak in a specific social situation (eg, school) but not in others (eg, home). It is often associated with anxiety, especially social phobia. This child's language impairment is not specific to a certain situation.

(Choice D) Autism spectrum disorder is characterized by impaired social communication/interactions and restricted, repetitive patterns of behavior or interests typically presenting by age 2. Although language delay can be the first sign of autism, the diagnosis is unlikely in this child who has age-appropriate social interactions with her family (eg, showing father her drawing, imitating a phone call).

Educational objective:
Failure to say ≥3 words in addition to "mama" and "dada" at age 18 months is indicative of language delay. Initial evaluation includes audiology testing to assess for potential hearing loss.

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A 45-year-old man is hospitalized due to suicidal ideation. Over the past month, the patient has become increasingly depressed, withdrawn, and physically restless. He has had increasing difficulty concentrating at his job as a computer programmer. The patient's appetite has been poor, and he has had difficulty falling and staying asleep. He stopped going to work last week and refused to leave the house until his hospitalization. The patient has no medical or psychiatric history. Physical examination is unremarkable apart from a 4.5-kg (10-lb) weight loss. On mental status examination, the patient appears depressed and anxious. He reports that he is responsible for "all the evil in the world" and has heard a voice for the past week telling him that he does not deserve to live. Which of the following is the most likely diagnosis in this patient?

- A. Bipolar disorder with psychotic features
- B. Delusional disorder
- C. Major depressive disorder with psychotic features
- D. Schizoaffective disorder
- E. Schizophrenia
- F. Schizophreniform disorder

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- ✗ A. Bipolar disorder with psychotic features (2%)
- B. Delusional disorder (1%)
- ✓ C. Major depressive disorder with psychotic features (70%)
- D. Schizoaffective disorder (11%)
- E. Schizophrenia (2%)
- F. Schizophreniform disorder (11%)

Incorrect
Correct answer
C

70%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

This patient's presentation is consistent with **major depressive disorder (MDD) with psychotic features**. This disorder is a severe subtype of MDD in which the patient develops **psychotic symptoms exclusively during** a

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This patient's presentation is consistent with **major depressive disorder (MDD) with psychotic features**. This disorder is a severe subtype of MDD in which the patient develops **psychotic symptoms exclusively during** a **depressive episode**. This patient's ≥2 weeks of depressed mood, impaired concentration, decreased appetite/weight loss, sleep disturbance, and suicidal ideation meet criteria for MDD, and his psychotic symptoms (eg, delusions of causing evil, auditory hallucinations) specify the psychotic features subtype. Delusions and hallucinations are commonly mood congruent and have depressive themes (eg, deserved punishment, worthlessness, nihilism), although mood-incongruent psychotic symptoms (unrelated to depressive themes) can also occur.

Differentiating MDD with psychotic features from MDD without psychotic features is important as treatment differs. Patients with MDD with psychotic features require combined treatment with an **antidepressant and antipsychotic** or electroconvulsive therapy.

(Choice A) This patient has no history of mania or hypomania, thereby ruling out bipolar disorder.

(Choice B) In delusional disorder, patients experience delusions but no other psychotic symptoms for at least a month. Mood symptoms, if present, are brief and not a prominent part of the illness.

(Choice D) Patients with schizoaffective disorder also experience both mood and psychotic symptoms. Schizoaffective disorder is differentiated from MDD with psychotic features by the presence of delusions and/or hallucinations for ≥2 weeks in the absence of MDD mood symptomatology. There is no evidence that this patient has experienced psychotic symptoms outside of his MDD episode.

(Choices E and F) Patients with schizophreniform disorder and schizophrenia experience psychotic symptoms in the absence of an identifiable mood disorder. In schizophreniform disorder, symptoms last ≥1 month but <6 months; in schizophrenia, symptoms persist for ≥6 months.

Educational objective:
Major depressive disorder (MDD) with psychotic features is a severe subtype of unipolar major depression characterized by symptoms meeting the criteria for MDD and the presence of delusions and/or hallucinations.

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disorder is a severe subtype of MDD in which the patient develops **psychotic symptoms exclusively during** a **depressive episode**. This patient's ≥2 weeks of depressed mood, impaired concentration, decreased appetite/weight loss, sleep disturbance, and suicidal ideation meet criteria for MDD, and his psychotic symptoms (eg, delusions of causing evil, auditory hallucinations) specify the psychotic features subtype. Delusions and hallucinations are commonly mood congruent and have depressive themes (eg, deserved punishment, worthlessness, nihilism), although mood-incongruent psychotic symptoms (unrelated to depressive themes) can also occur.

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Educational objective:
Major depressive disorder (MDD) with psychotic features is a severe subtype of unipolar major depression characterized by symptoms meeting the criteria for MDD and the presence of delusions and/or hallucinations.

References

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A 17-year-old, previously healthy boy is brought to the office by his mother due to heartburn. He describes an intermittent burning sensation behind his chest that has developed over the past several months. The patient has taken over-the-counter medications without relief. His mother notes that he has been losing weight. There is no history of dysphagia, abdominal pain, melena, or hematochezia. The patient was made a starter on the high school soccer team about a year ago, and his mother adds that he does not want to miss any workouts. Blood pressure is 106/64 mm Hg, pulse is 65/min, and respirations are 18/min. Age-adjusted BMI is 17 kg/m^2. The patient has a thin build. Oropharyngeal examination reveals mild pharyngeal hyperemia and dental erosions over the lingual surface. The abdomen is soft and nontender. Which of the following additional findings is most likely present in this patient?

- A. Accelerated gastric emptying
- B. Absence of esophageal peristalsis
- C. Blunting of the intestinal villi
- D. Decreased intestinal motility
- E. Fatty infiltration of the liver

Submit

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Incorrect
Correct answer
D

Collecting Statistics

04 secs
Time Spent

2023
Version

Explanation

This adolescent athlete has treatment-refractory heartburn, weight loss, and tooth decay, likely due to self-induced vomiting (ie, **purging**). Purging may be used as a maladaptive behavioral response to reduce body weight (ie, **anorexia nervosa**), particularly in environments that emphasize lean physiques (eg, aerobic sports)

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This adolescent athlete has treatment-refractory heartburn, weight loss, and tooth decay, likely due to self-induced vomiting (ie, **purging**). Purging may be used as a maladaptive behavioral response to reduce body weight (ie, **anorexia nervosa**), particularly in environments that emphasize lean physiques (eg, aerobic sports).

During vomiting, gastric acid expelled from the stomach irritates the esophagus (eg, retrosternal chest pain perceived as **heartburn**), larynx (eg, dysphonia), and the oropharynx (eg, **dental erosions**). Vomiting stimulates salivary production to help protect against this tissue damage; over time, repeated vomiting causes physiologic **salivary gland hypertrophy**.

Patients with significantly **low body weight** also develop changes in the gastrointestinal tract to **optimize nutrient extraction**:

- Gastric emptying is reduced, increasing digestion and maximizing nutrient availability from food. This may manifest as postprandial bloating and early satiety **(Choice A)**.
- Liver cells undergo autophagy and apoptosis in order to recycle and conserve limited nutrient resources. This may be observed as a mildly elevated transaminase level.
- **Intestinal motility** is **decreased**, increasing time for nutrients to be absorbed from digested food. This may manifest as constipation.

(Choice B) Absence of esophageal peristalsis characterizes achalasia, which results from degeneration of the myenteric plexus. Patients can present with heartburn and significant weight loss. However, patients also typically have progressive difficulty swallowing solids and liquids and regurgitation of undigested food.

(Choice C) Symptoms of celiac disease result from inflammatory damage to the colonic mucosa (ie, blunting of intestinal villi), causing malabsorption (eg, abdominal discomfort, greasy stools, weight loss). However, this patient's presentation (ie, athlete with heartburn/dental erosions) strongly suggest weight loss related to purging.

(Choice E) When patients with anorexia begin nutritional rehabilitation, fatty infiltration of the liver may be observed as it begins to store large amounts of energy as fat.

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saliva production to help protect against this tissue damage; over time, repeated vomiting causes physiologic **salivary gland hypertrophy**.

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(Choice E) When patients with anorexia begin nutritional rehabilitation, fatty infiltration of the liver may be observed as it begins to store large amounts of energy as fat.

Educational objective:
Self-induced vomiting (ie, purging) damages the upper gastrointestinal tract (eg, heartburn, dental erosions) and results in compensatory physiologic responses (eg, salivary gland hypertrophy). Patients with significantly low body weight also develop changes to optimize nutrient extraction and availability (eg, decreased gastric emptying and intestinal motility).

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A 28-year-old man comes to the office due to occasional anxiety attacks over the past 6 months. The patient describes episodes that "come out of nowhere" in which he feels light-headed, sweaty, shaky, and nauseated. He says, "At first I didn't really care because the attacks don't last long, but now I'm worried I'll have one while I'm at work or when I'm driving." The patient has no history of cardiac disease and takes no medications. He has 4 or 5 alcoholic drinks 3 times a week and adds, "Having some beers and watching football really help take my mind off of things." The patient appears calm, and vital signs are within normal limits. Physical examination, ECG, comprehensive metabolic panel, and thyroid function tests show no abnormalities. Which of the following is the most appropriate pharmacotherapy for this patient?

- A. Benzodiazepine
- B. Beta blocker
- C. Monoamine oxidase inhibitor
- D. Second-generation antipsychotic
- E. Selective serotonin reuptake inhibitor
- F. Tricyclic antidepressant

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- A. Benzodiazepine (14%)
- ✗ B. Beta blocker (11%)
- C. Monoamine oxidase inhibitor (0%)
- D. Second-generation antipsychotic (1%)
- ✓ E. Selective serotonin reuptake inhibitor (71%)
- F. Tricyclic antidepressant (0%)

Incorrect
Correct answer
E

71%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Panic disorder	
	Recurrent & unexpected panic attacks with ≥4 of the following:

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Panic disorder	

Clinical features	• Recurrent & unexpected panic attacks with ≥4 of the following:
	  ◦ Chest pain, palpitations, shortness of breath, choking
	  ◦ Trembling, sweating, nausea, chills
	  ◦ Dizziness, paresthesia
	  ◦ Derealization, depersonalization
	  ◦ Fear of losing control or of dying
	• Worry about additional attacks, avoidance behavior

Treatment	• Antidepressants (SSRI/SNRI) • Cognitive-behavioral therapy
SNRI = serotonin-norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor.	

This patient's recurrent, unexpected anxiety attacks and physical symptoms of dizziness, sweating, shaking, and nausea without an identifiable medical cause are consistent with **panic disorder**. Affected patients usually worry about having future attacks, as in this case, and frequently develop avoidance behaviors and agoraphobia.

Treatment options for panic disorder include antidepressants and/or cognitive-behavioral therapy. Among the antidepressants, **selective serotonin reuptake inhibitors** (SSRIs) or serotonin-norepinephrine reuptake inhibitors are the preferred first-line therapy because of their relatively benign adverse effect profile compared with that of monoamine oxidase inhibitors and tricyclic antidepressants **(Choices C and F)**.

Benzodiazepines are also effective in panic disorder and have a more rapid onset of action. However, because of the risks for abuse and addiction, they are typically reserved for short-term use in acutely symptomatic and functionally impaired patients who require rapid relief. They should be avoided in patients with a history of or high risk for substance misuse, such as this patient **(Choice A)**.

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	• Worry about additional attacks, avoidance behavior
Treatment	• Antidepressants (SSRI/SNRI) • Cognitive-behavioral therapy

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Benzodiazepines are also effective in panic disorder and have a more rapid onset of action. However, because of the risks for abuse and addiction, they are typically reserved for short-term use in acutely symptomatic and functionally impaired patients who require rapid relief. They should be avoided in patients with a history of or high risk for substance misuse, such as this patient **(Choice A)**.

(Choice B) Although this patient has prominent physical symptoms, beta blockers as monotherapy are not effective in panic disorder. They can be used to treat the physiologic manifestations of performance anxiety.

(Choice D) There is no evidence to support the use of antipsychotics as monotherapy for panic disorder.

Educational objective:
Selective serotonin reuptake inhibitors are first-line pharmacotherapy for panic disorder. Benzodiazepines are reserved for patients who require immediate relief but should be avoided in those with substance misuse.

References

- Evidence-based pharmacotherapy of panic disorder: an update.

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A 14-year-old boy is brought to the office by his mother for a 6-month checkup for asthma. Although the patient's asthma is generally well controlled with long-acting agents, he has episodes of exercise-induced bronchoconstriction for which he was prescribed a short-acting beta agonist. His mother became concerned after the physical education teacher called from school saying that her son was refusing to participate in class. When asked about this, the patient said that it was easier to avoid exercising than to use an inhaler at school. Family history is significant for chronic obstructive pulmonary disease (COPD) in his maternal grandfather, heart disease in his father, and generalized anxiety disorder in his mother. Vital signs and physical examination are within normal limits. Which of the following factors would most likely increase this patient's adherence with bronchodilator administration?

- A. Receiving education about the association between asthma and COPD
- B. Receiving online resources about successful athletes who have asthma
- C. Receiving counsel from the physician that inhaler use before exercise prevents asthma symptoms
- D. Receiving written material about the benefits of exercise in long-term asthma management
- E. Seeing peers use asthma inhalers at school
- F. Understanding that his mother is very concerned about his behavior

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A 14-year-old boy is brought to the office by his mother for a 6-month checkup for asthma. Although the patient's asthma is generally well controlled with long-acting agents, he has episodes of exercise-induced bronchoconstriction for which he was prescribed a short-acting beta agonist. His mother became concerned after the physical education teacher called from school saying that her son was refusing to participate in class. When asked about this, the patient said that it was easier to avoid exercising than to use an inhaler at school. Family history is significant for chronic obstructive pulmonary disease (COPD) in his maternal grandfather, heart disease in his father, and generalized anxiety disorder in his mother. Vital signs and physical examination are within normal limits. Which of the following factors would most likely increase this patient's adherence with bronchodilator administration?

- A. Receiving education about the association between asthma and COPD (1%)
- ✗ B. Receiving online resources about successful athletes who have asthma (9%)
- C. Receiving counsel from the physician that inhaler use before exercise prevents asthma symptoms (14%)
- D. Receiving written material about the benefits of exercise in long-term asthma management (3%)
- ✓ E. Seeing peers use asthma inhalers at school (70%)
- F. Understanding that his mother is very concerned about his behavior (0%)

Incorrect
Correct answer
E

70%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

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Adolescence involves the developmental tasks of separating from parental figures and finding one's own place in society, which includes beginning to take responsibility for one's physical health. This exploration is often accompanied by rebelling, pushing limits, and having a strong need to fit in with a peer group, all factors that may contribute to low treatment adherence rates. In particular, adolescents with chronic medical conditions may hide their illness due to feeling self-conscious and different from their peers. Factors associated with **better treatment adherence** rates include close **peers with complementary behavioral practices**, positive family functioning, school involvement, physician empathy, and immediate benefits of treatment.

Another factor affecting adolescent treatment adherence is that the prefrontal cortex (center of executive function) does not fully develop until the third decade of life. Compared to adults, adolescents are less able to weigh the risks and benefits of their decisions or to anticipate that negative consequences may occur.

(Choices A and D) Although education and written instruction are important in increasing adherence, adolescents struggle to conceive of possibilities outside their immediate experience and do not anticipate negative consequences happening to them. The desire to improve long-term asthma symptoms or to prevent chronic obstructive pulmonary disease is unlikely to be a major motivating factor.

(Choice B) Although learning about role models (eg, famous athletes) with asthma might be helpful, similar peer behavior is more likely to decrease this patient's embarrassment about using an inhaler in the school setting.

(Choice C) Physician education about the patient's illness is unlikely to be as strong a factor in adherence as peer acceptance. As adolescents strive to become more independent, they may rebel against authority figures, including physicians.

(Choice F) Although parental attitudes and support are important in helping adolescents maintain adherence, making the patient feel responsible for causing his mother's concern is inappropriate and unlikely to facilitate adherence.

Educational objective:

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Educational objective:
Adolescents have low treatment adherence rates due to issues with autonomy, rebellion against authority, increased self-consciousness, and a lack of understanding of potential risks. Peer behavior has a strong influence on adherence due to adolescents' desire to fit in with their social groups.

References

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A 63-year-old man comes to the office for follow-up of hypertension. At his last appointment, he revealed that he had increased his intake of 12-oz cans of beer from 3 to 6 cans daily due to stress at work. The physician advised him to seek help for his alcohol use because it could be causing his elevated blood pressure and has many negative health risks. The patient now tells the physician, "I thought about what you said. I know my alcohol use has gotten out of hand and is affecting my health. My wife and daughter also say that I need to quit. I have made an appointment with a counselor to talk about my options." Which of the following best describes this patient's stage of behavioral change?

- A. Action
- B. Contemplation
- C. Intellectualization
- D. Precontemplation
- E. Preparation
- F. Rationalization

Submit

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- A. Action (20%)
- B. Contemplation (12%)
- ✗ C. Intellectualization (0%)
- D. Precontemplation (0%)
- ✓ E. Preparation (65%)
- F. Rationalization (0%)

Incorrect
Correct answer
E

65%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

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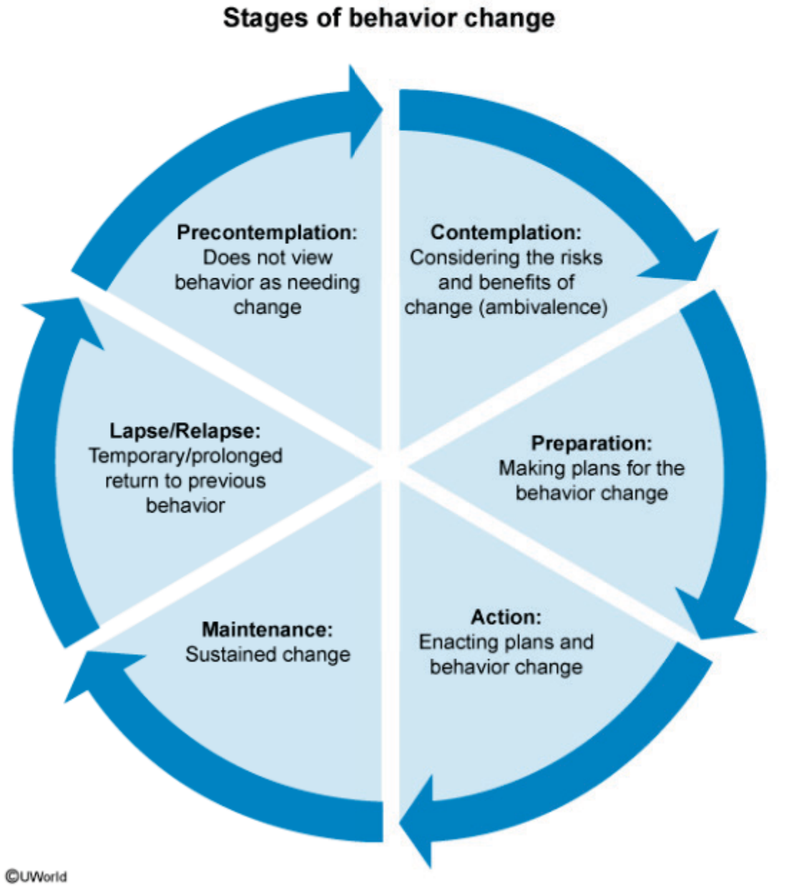
Exhibit Display



Zoom In | Zoom Out | Reset | New | Existing | My Notebook

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The transtheoretical model of behavioral change describes **5 stages** that many people progress through when making significant **behavioral change**. It begins with initial denial of the problem (precontemplation), moving through admitting the problem and the need to change (contemplation), committing to change and planning a change strategy (preparation), and taking concrete steps to implement change (action). Finally, behavioral change requires efforts for long-term maintenance.

This patient has acknowledged his drinking problem and is developing plans for behavioral change. Characteristic features of the **preparation stage** include the following:

- The individual is no longer simply considering change but has **made a commitment** to change.
- The individual is **weighing specific options** to effect change.
- The individual may be **seeking supportive resources** to assist change.

In the preparation stage, the individual may take initial, preliminary steps to effect behavioral change (eg, contacting a substance abuse counselor) but has not yet taken concrete action with a demonstrable change in the subject behavior.

(Choice A) In the action stage, the individual has initiated a specific plan and taken concrete steps to effect change. Demonstrable changes in the subject behavior (eg, reducing the quantity of alcohol consumption) are seen.

(Choices B and D) In the precontemplation stage, patients deny the problem or attribute it to external factors (eg, work stress) without acknowledging the need for change. In the contemplation stage, the patient acknowledges the problem but is ambivalent about the need for change and is not yet considering specific strategies for change.

(Choices C and F) Intellectualization and rationalization are defense mechanisms rather than stages of change. Intellectualization is the use of intellectual argument to avoid painful feelings. Rationalization is the making of excuses to justify behavior or avoid the truth. Defense mechanisms are often used in the precontemplation or contemplation phases to avoid acknowledging the problem or making behavioral changes.

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- The individual is **weighing specific options** to effect change.
- The individual may be **seeking supportive resources** to assist change.

In the preparation stage, the individual may take initial, preliminary steps to effect behavioral change (eg, contacting a substance abuse counselor) but has not yet taken concrete action with a demonstrable change in the subject behavior.

(Choice A) In the action stage, the individual has initiated a specific plan and taken concrete steps to effect change. Demonstrable changes in the subject behavior (eg, reducing the quantity of alcohol consumption) are seen.

(Choices B and D) In the precontemplation stage, patients deny the problem or attribute it to external factors (eg, work stress) without acknowledging the need for change. In the contemplation stage, the patient acknowledges the problem but is ambivalent about the need for change and is not yet considering specific strategies for change.

(Choices C and F) Intellectualization and rationalization are defense mechanisms rather than stages of change. Intellectualization is the use of intellectual argument to avoid painful feelings. Rationalization is the making of excuses to justify behavior or avoid the truth. Defense mechanisms are often used in the precontemplation or contemplation phases to avoid acknowledging the problem or making behavioral changes.

Educational objective:
In the transtheoretical stages of change model, the preparation stage represents the stage in which the individual has committed to behavioral change and is considering change strategies but has not determined or instituted a specific course of action. Individuals at this stage may be weighing options and seeking additional support.

References

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An 18-year-old boy is brought to the emergency department by his mother due to his strange behavior. The mother says that he laughs inappropriately and seems sluggish. The boy has recently been hanging out with a new group of friends that he describes as "really cool." He has also stopped attending family events and appears apathetic about his schoolwork. When asked in private, the boy admits smoking marijuana. Which of the following physiologic effects is most likely to be observed in this patient?

- A. Bradycardia
- B. Conjunctival injection
- C. Miosis
- D. Mydriasis
- E. Nystagmus
- F. Respiratory depression

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An 18-year-old boy is brought to the emergency department by his mother due to his strange behavior. The mother says that he laughs inappropriately and seems sluggish. The boy has recently been hanging out with a new group of friends that he describes as "really cool." He has also stopped attending family events and appears apathetic about his schoolwork. When asked in private, the boy admits smoking marijuana. Which of the following physiologic effects is most likely to be observed in this patient?

- A. Bradycardia (4%)
- ✓ B. Conjunctival injection (80%)
- C. Miosis (4%)
- D. Mydriasis (7%)
- E. Nystagmus (1%)
- F. Respiratory depression (1%)

Correct

80%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Marijuana (cannabis) is one of the most commonly used drugs in the United States. It is a cannabinoid that contains the active ingredient tetrahydrocannabinol (THC). Smoking is the preferred route of delivery, and once inhaled, marijuana produces effects that last from 1-4 hours. THC stimulates cannabinoid receptors (CB1 and CB2 receptors) to produce effects on mood, perception, and cognition.

Marijuana produces a mild euphoria with inappropriate laughter, sedation, slowed reflexes, impaired motor

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Marijuana (cannabis) is one of the most commonly used drugs in the United States. It is a cannabinoid that contains the active ingredient tetrahydrocannabinol (THC). Smoking is the preferred route of delivery, and once inhaled, marijuana produces effects that last from 1-4 hours. THC stimulates cannabinoid receptors (CB1 and CB2 receptors) to produce effects on mood, perception, and cognition.

Marijuana produces a mild euphoria with inappropriate laughter, sedation, slowed reflexes, impaired motor coordination, distorted sensory perceptions, and cognitive impairment (decreased attention, concentration, short-term memory, and judgment). The most characteristic physiological signs of marijuana intoxication are **conjunctival injection (red eyes), tachycardia, increased appetite, and dry mouth.**

Marijuana is metabolized in the liver, distributed and stored in lipophilic tissues, and slowly released. It remains in the body for a long time; depending on the amount and frequency of use, it can be detected in the urine up to 30 days after daily use has ceased.

(Choices A and F) Cannabis intoxication results in tachycardia and does not cause respiratory depression. Bradycardia can occur with GHB (gamma hydroxybutyric acid), opiate, or benzodiazepine intoxication. In toxic doses, all three central nervous system depressants can cause respiratory depression.

(Choice C) Miosis (constricted, pinpoint pupils) is commonly seen in opiate intoxication.

(Choice D) Mydriasis (dilated pupils) occurs in cocaine intoxication and opiate withdrawal.

(Choice E) Nystagmus is a rhythmic, regular oscillation of the eyes and is commonly seen with phencyclidine (PCP) intoxication.

Educational objective:
Marijuana contains tetrahydrocannabinol, which stimulates cannabinoid receptors to produce a mild euphoria with inappropriate laughter, increased appetite, slowed reaction time/motor speed, and cognitive impairment. Tachycardia and conjunctival injection are the 2 most immediate physical symptoms of marijuana use.

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A 30-year-old man comes to the office due to depression. He describes a 4-week history of severely depressed mood, loss of motivation, loss of interest, and sleeping 12 hours a day. The patient has difficulty concentrating and worries that it is interfering with his work. He is pessimistic about the future but has no suicidal thoughts. The patient had a previous depressive episode in his 20s that responded rapidly to sertraline. He felt "really good and energetic" after a few days of treatment but discontinued the antidepressant a week later as he did not feel that he needed it. He drinks 1 or 2 beers on social occasions. Physical examination is normal. Which of the following would be most important to assess prior to initiating pharmacologic treatment for this patient?

- A. Complete blood count
- B. Comprehensive metabolic panel
- C. Electrocardiogram
- D. History of mania
- E. History of sexual dysfunction
- F. Urine toxicology

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- A. Complete blood count (2%)
- ✗ B. Comprehensive metabolic panel (6%)
- C. Electrocardiogram (2%)
- ✓ D. History of mania (65%)
- E. History of sexual dysfunction (19%)
- F. Urine toxicology (3%)

Incorrect
Correct answer
D

65%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

All patients with a major depressive episode should be screened for a **past history of manic episodes** to differentiate major depressive disorder (unipolar depression) from **bipolar disorder**. This is particularly relevant in this patient as his atypically rapid response to the selective serotonin reuptake inhibitor sertraline is suggestive of

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All patients with a major depressive episode should be screened for a **past history of manic episodes** to differentiate major depressive disorder (unipolar depression) from **bipolar disorder**. This is particularly relevant in this patient as his atypically rapid response to the selective serotonin reuptake inhibitor sertraline is suggestive of treatment-emergent mania. If further history substantiates a diagnosis of bipolar disorder, **antidepressant monotherapy** should be avoided, as all antidepressants carry a **risk of inducing mania**.

Bipolar patients in the depressed phase may be misdiagnosed with unipolar major depressive disorder when either the physician neglects to ask about past manic symptoms or patients do not report them due to limited insight, difficulty recalling, or a tendency to minimize past manic episodes. Physicians should question patients regarding a history of distinct periods of elevated mood and increased energy, decreased need for sleep, hyperactivity, racing thoughts, and uncharacteristic risk-taking behavior.

(Choices A, B, and F) A complete blood count, metabolic panel, and urine toxicology screen are not priorities for this patient with no new physical symptoms, normal physical examination, and minimal substance use. Selected laboratory tests should be performed in cases of treatment-resistant depression or in patients who experience new-onset physical symptoms along with depression (eg, thyroid function tests in a patient with signs of hypothyroidism).

(Choice C) An ECG is not routinely performed prior to prescribing first-line antidepressants in an otherwise healthy, young patient.

(Choice E) A history of sexual dysfunction would be helpful prior to selection and initiation of a specific antidepressant, as medications commonly cause sexual dysfunction. However, ensuring accurate diagnosis by screening for bipolar disorder takes precedence.

Educational objective:
Patients experiencing a major depressive episode should be carefully screened for past manic episodes to rule out bipolar disorder. Antidepressant monotherapy should be avoided in patients with bipolar disorder due to the risk of precipitating mania.

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A 26-year-old woman comes to the office due to recent weight gain. She has eaten more than usual over the last 5 months, has gained 3.2 kg (7 lb), and feels guilty and depressed about it. Further questioning reveals that she consumes a large pizza and two large bags of chips in one sitting several times a week. Afterward, the patient feels ashamed about being unable to control her intake and fasts to make up for it. She is very distressed about being unable to lose weight despite exercising 2-3 hours a day. Vital signs are within normal limits. BMI is 23.7 kg/m^2. Despite being told that her BMI is normal, the patient insists that she is overweight. Which of the following is the most likely diagnosis?

- A. Adjustment disorder with depressed mood
- B. Anorexia nervosa
- C. Binge-eating disorder
- D. Body dysmorphic disorder
- E. Bulimia nervosa
- F. Normal behavior

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- A. Adjustment disorder with depressed mood (0%)
- ✗ B. Anorexia nervosa (2%)
- C. Binge-eating disorder (34%)
- D. Body dysmorphic disorder (9%)
- ✓ E. Bulimia nervosa (53%)
- F. Normal behavior (0%)

Incorrect
Correct answer
E

53%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Eating disorders		
Diagnosis	**Clinical features**	**Treatment**

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Eating disorders		
Diagnosis	**Clinical features**	**Treatment**
Anorexia nervosa	• **BMI <18.5 kg/m^2** • Intense fear of weight gain • Distorted views of body weight & shape	• Cognitive-behavioral therapy • Nutritional rehabilitation • **Olanzapine** if no response to first-line treatments
Bulimia nervosa	• Recurrent episodes of binge eating • Binge eating and **inappropriate compensatory behavior** to prevent weight gain • Excessive worrying about body shape & weight	• Cognitive-behavioral therapy • Nutritional rehabilitation • **SSRI (fluoxetine)**, often in combination with first-line treatments
Binge eating disorder	• Recurrent episodes of binge eating • **No inappropriate compensatory behaviors** • Lack of control during eating	• Cognitive-behavioral therapy • Behavioral weight loss therapy • SSRI • Lisdexamfetamine, topiramate
SSRI = selective serotonin reuptake inhibitor.		

This patient's recurrent episodes of **eating large amounts** of food and sense of loss of control, together with compensatory behaviors (fasting, exercising) to prevent weight gain, is consistent with **bulimia nervosa** (BN). Patients with BN are excessively preoccupied with their weight and body shape. Although self-induced vomiting is the most common **compensatory behavior**, patients may also fast and exercise excessively or misuse laxatives, enemas, diuretics, or diet pills. In DSM-5, both binges and inappropriate compensatory behaviors must occur at least once a week for 3 months for diagnosis. Patients with BN are **normal weight or overweight**, in contrast to

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This patient's recurrent episodes of **eating large amounts** of food and sense of loss of control, together with compensatory behaviors (fasting, exercising) to prevent weight gain, is consistent with **bulimia nervosa** (BN). Patients with BN are excessively preoccupied with their weight and body shape. Although self-induced vomiting is the most common **compensatory behavior**, patients may also fast and exercise excessively or misuse laxatives, enemas, diuretics, or diet pills. In DSM-5, both binges and inappropriate compensatory behaviors must occur at least once a week for 3 months for diagnosis. Patients with BN are **normal weight or overweight**, in contrast to individuals with anorexia nervosa.

Signs of BN in patients who vomit regularly may include hypotension, tachycardia, dry skin, menstrual irregularities, erosion of dental enamel, parotid hypertrophy, calloused knuckles, and electrolyte abnormalities (eg, hypokalemia, hypochloremia, metabolic alkalosis).

(Choice A) This patient's depressive and guilty feelings after a binge are characteristic of BN.

(Choice B) Both BN and anorexia nervosa may be characterized by preoccupation with weight, binge eating, and compensatory behavior (there is a binge-eating/purging subtype of anorexia). Patients with anorexia nervosa have significantly low body weight (BMI <18.5 kg/m^2). In BN, body weight is typically normal to increased.

(Choice C) In binge-eating disorder, patients engage in recurrent episodes of binge eating but do not use inappropriate compensatory behaviors as in BN.

(Choice D) Body dysmorphic disorder is characterized by intense preoccupation with a perceived defect in physical appearance leading to significant functional impairment. It is not diagnosed when weight gain is the preoccupation of an individual who meets the criteria for an eating disorder.

(Choice F) This patient's 5-month history of frequent binge-eating episodes, followed by fasting and exercising, meets criteria for BN.

Educational objective:
Bulimia nervosa (BN) is characterized by recurrent episodes of binge eating followed by compensatory behaviors

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Patients with BN are excessively preoccupied with their weight and body shape. Although self-induced vomiting is the most common **compensatory behavior**, patients may also fast and exercise excessively or misuse laxatives, enemas, diuretics, or diet pills. In DSM-5, both binges and inappropriate compensatory behaviors must occur at least once a week for 3 months for diagnosis. Patients with BN are **normal weight or overweight**, in contrast to individuals with anorexia nervosa.

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(Choice F) This patient's 5-month history of frequent binge-eating episodes, followed by fasting and exercising, meets criteria for BN.

Educational objective:
Bulimia nervosa (BN) is characterized by recurrent episodes of binge eating followed by compensatory behaviors to prevent weight gain (eg, fasting, exercising, vomiting, using laxatives). In contrast to patients with anorexia nervosa, BN patients are normal weight to overweight.

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A 38-year-old woman comes to the office due to dissatisfaction with her weight. Although the patient exercises with a personal trainer weekly and tries to eat well-balanced meals, she loses control several times a week, frequently consuming an entire pizza or large bag of chips by herself. The patient says, "I'm not even hungry when it happens, and I feel so guilty afterward. I can't even look at myself in the mirror anymore because I'm disgusting." She smokes marijuana once a week and does not use alcohol or other recreational substances. BMI is 23.4 kg/m^2. Which of the following is the most likely explanation for this patient's eating habits?

- A. Anorexia nervosa, binge eating/purging type
- B. Binge eating disorder
- C. Body dysmorphic disorder
- D. Bulimia nervosa
- E. Cannabis use

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- A. Anorexia nervosa, binge eating/purging type (2%)
- ✓ B. Binge eating disorder (74%)
- C. Body dysmorphic disorder (7%)
- D. Bulimia nervosa (13%)
- E. Cannabis use (2%)

Correct

74% Answered correctly

03 secs Time Spent

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Explanation

Eating disorders	
Diagnosis	**Clinical features**
Anorexia nervosa	• **BMI <18.5 kg/m^2** • Intense fear of weight gain

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Eating disorders	
Diagnosis	**Clinical features**
Anorexia nervosa	• **BMI <18.5 kg/m^2** • Intense fear of weight gain • Distorted views of body weight & shape
Bulimia nervosa	• Recurrent episodes of binge eating • Binge eating and **inappropriate compensatory behavior** to prevent weight gain • Excess worrying about body shape & weight
Binge eating disorder	• Recurrent episodes of binge eating • **No inappropriate compensatory behaviors** • Lack of control during eating

This patient's recurrent episodes of **binge eating** (ie, consuming an excessively large amount of food in a discrete period) associated with a sense of **lack of control** are consistent with **binge eating disorder** (BED). In BED, feelings of disgust, guilt, or depression commonly follow a binge, and this patient's report of weight dissatisfaction is typical. BED is differentiated from bulimia nervosa by the **absence of compensatory behaviors** (eg, self-induced vomiting, fasting, misuse of laxatives, excessive exercise) **(Choice D)**.

BED is the most common eating disorder and occurs more commonly in women. Although patients with BED are more likely to be obese, it also occurs in those with normal weight, such as this patient. Treatment approaches include psychotherapy, behavioral weight loss therapy, and pharmacotherapy.

(Choice A) Anorexia nervosa is characterized by significantly low weight, intense fears of being fat despite being underweight, and distorted body image. The disorder can be subtyped as restricting or binge/purge type.

(Choice C) Patients with body dysmorphic disorder are obsessively preoccupied with nonexistent or slight defects

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disorder	• **No inappropriate compensatory behaviors** • Lack of control during eating

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(Choice C) Patients with body dysmorphic disorder are obsessively preoccupied with nonexistent or slight defects in physical appearance. It is not diagnosed in patients whose main concern is weight and who also meet criteria for an eating disorder.

(Choice E) Although cannabis use is associated with increased appetite, this patient smokes marijuana only once a week, whereas her binges occur several times a week.

Educational objective:
Binge eating disorder is the most common eating disorder. It is differentiated from bulimia nervosa by the absence of compensatory behaviors (eg, self-induced vomiting, excessive exercise).

Behavioral science	Psychiatric/Behavioral & Substance Use Disorder	Binge eating disorder
Subject	System	Topic

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A 24-year-old woman comes to the office due to recurrent episodes of chest pain, palpitations, and shortness of breath over the past few months. During some episodes, she experiences dizziness, diaphoresis, and paresthesias of the hands. The episodes last 5-10 minutes, and the patient constantly worries about when and where she will have another one. She says, "This keeps happening and no one has been able to tell me why. I'm scared something might be seriously wrong with me." The patient has been to the emergency department twice in the past month for similar episodes; prior evaluation, including complete metabolic profile, thyroid function tests, arterial blood gas analysis, ECG, cardiac enzymes, and chest x-ray, showed no abnormalities. Vital signs are within normal limits. Physical examination is unremarkable. Which of the following is the most likely diagnosis?

- A. Conversion disorder
- B. Factitious disorder
- C. Generalized anxiety disorder
- D. Illness anxiety disorder
- E. Panic disorder
- F. Somatic symptom disorder

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- A. Conversion disorder (1%)
- ✗ B. Factitious disorder (0%)
- C. Generalized anxiety disorder (2%)
- D. Illness anxiety disorder (6%)
- ✓ E. Panic disorder (75%)
- F. Somatic symptom disorder (13%)

Incorrect
Correct answer
E

75%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

Panic disorder	
	Recurrent & unexpected panic attacks with ≥4 of the following:

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Panic disorder	
Clinical features	• Recurrent & unexpected panic attacks with ≥4 of the following: ◦ Chest pain, palpitations, shortness of breath, choking ◦ Trembling, sweating, nausea, chills ◦ Dizziness, paresthesia ◦ Derealization, depersonalization ◦ Fear of losing control or of dying • Worry about additional attacks, avoidance behavior
Treatment	• First-line/maintenance: SSRI/SNRI &/or cognitive-behavioral therapy • Acute distress: benzodiazepines
SNRI = serotonin norepinephrine reuptake inhibitor; **SSRI** = selective serotonin reuptake inhibitor.	

Recurrent episodes of chest pain, palpitations, shortness of breath, sweating, dizziness, and paresthesia lasting <10 minutes in a young, otherwise healthy patient are characteristic of **panic disorder**. Onset of panic attacks is **unexpected** and sudden, accompanied by an abrupt surge in **anxiety and fear**. Patients with panic disorder **worry about recurrent attacks** and frequently **avoid situations** due to fears of having another attack.

Panic disorder is characterized by prominent, paroxysmal, **physical symptoms** (eg, cardiorespiratory, gastrointestinal), and patients may not receive an accurate diagnosis until repeated medical workups are negative. Due to delays in diagnosis, some patients may become preoccupied with fears of having an undiagnosed condition, resulting in high health care use (eg, recurrent emergency department visits).

(Choice A) Conversion disorder (also called functional neurological symptom disorder) involves development of a neurological symptom that is inconsistent with a known neurological disease. This patient's dizziness and paresthesia occur only in the context of abrupt-onset and episodic cardiorespiratory symptoms, which is characteristic of panic disorder.

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(Choice B) In factitious disorder, patients intentionally falsify symptoms to assume the sick role; evidence of falsification is necessary for diagnosis. There is no indication that this patient is fabricating her symptoms.

(Choice C) Generalized anxiety disorder is characterized by persistent worry about multiple issues (eg, work, finances, health) and lasts ≥6 months. Although this patient has chronic anxiety, it is specifically related to her fears of having another attack and not having received a diagnosis.

(Choice D) In illness anxiety disorder, patients experience excessive anxiety about having or acquiring a serious illness and have few or no physical symptoms. This patient has multiple physical symptoms, and she is concerned that they are due to a medical illness because she has not been accurately diagnosed.

(Choice F) Both panic disorder and somatic symptom disorder feature multiple physical symptoms and high health care use. In somatic symptom disorder, patients experience physical symptoms persistently (eg, daily, unrelenting fatigue) whereas in panic disorder, physical symptoms are unexpected, episodic, and of short duration, typically lasting <10 minutes.

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Educational objective:
Panic disorder is characterized by recurrent anxiety attacks associated with prominent somatic symptoms. Abrupt onset of characteristic physical symptoms that resolve within minutes and a negative medical workup should raise suspicion for panic disorder.

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A 17-year-old girl is brought to the office by her parents due to recurrent episodes where "she seems to be lost in her own world." The parents say that the episodes began about 2 years ago, but seem to be occurring more frequently since a difficult breakup with her boyfriend several months ago. The patient acknowledges that she seems to "space out" easily. She says, "I often feel numb, like I'm in a fog or a dream. Sometimes, I feel as if I'm not myself, as if things are happening to someone else." The patient uses nonsteroidal anti-inflammatory drugs for menstrual cramps. She has no other medical conditions. She smokes cigarettes but does not use alcohol or illicit drugs. Physical and neurologic examinations are normal. On mental status examination, the patient is cooperative with a mildly anxious mood and flat affect. Which of the following is the most likely diagnosis?

- A. Absence seizures
- B. Brief psychotic disorder
- C. Depersonalization/derealization disorder
- D. Dissociative amnesia
- E. Dissociative identity disorder
- F. Post-traumatic stress disorder

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- A. Absence seizures (4%)
- B. Brief psychotic disorder (0%)
- ✓ C. Depersonalization/derealization disorder (86%)
- D. Dissociative amnesia (1%)
- E. Dissociative identity disorder (6%)
- F. Post-traumatic stress disorder (0%)

Correct

86%
Answered correctly

03 secs
Time Spent

2023
Version

Explanation

Dissociative disorders	

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Dissociative disorders	
Depersonalization/derealization disorder	• 1 or both: ◦ Depersonalization (detachment, unreality of self) ◦ Derealization (detachment, unreality of surroundings)
Dissociative amnesia	• Inability to recall personal information, usually of a traumatic or stressful nature
Dissociative identity disorder	• Fragmentation into ≥2 distinct personalities • Discontinuity in identity & personal agency

Although transient experiences of depersonalization and derealization are common in the general population, this patient's persistent and recurrent episodes are consistent with **depersonalization/derealization disorder**. It is classified as one of the dissociative disorders and should be differentiated from dissociative amnesia and dissociative identity disorder.

Episodes of **depersonalization** are characterized by a feeling of **detachment** or estrangement **from the self** or a sense of being an outside observer of the self. **Derealization** is a subjective sense of **detachment** or unreality regarding **surroundings**. In contrast to psychotic disorders, reality testing is intact during these unusual experiences (ie, individuals may feel detached from their bodies but know this is not true).

(Choice A) Absence seizures typically begin in childhood and are frequently associated with staring, repetitive eyelid movements, automatisms, and lack of awareness of the episodes.

(Choice B) This patient's intact reality testing and absence of psychotic symptoms (eg, delusions, hallucinations, disorganized speech and behavior) make brief psychotic disorder unlikely.

(Choices D and E) Dissociative amnesia involves gaps in autobiographical memory, usually associated with a traumatic event. Dissociative identity disorder is a rare condition associated with severe trauma that involves fragmentation of identity into ≥2 distinct personality states.

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(Choice A) Absence seizures typically begin in childhood and are frequently associated with staring, repetitive eyelid movements, automatisms, and lack of awareness of the episodes.

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(Choices D and E) Dissociative amnesia involves gaps in autobiographical memory, usually associated with a traumatic event. Dissociative identity disorder is a rare condition associated with severe trauma that involves fragmentation of identity into ≥2 distinct personality states.

(Choice F) Depersonalization/derealization is not diagnosed as a separate disorder when it occurs as a feature of post-traumatic stress disorder (PTSD). However, this patient does not meet other criteria for PTSD: exposure to life-threatening trauma, intrusion (eg, nightmares, flashbacks), avoidance of reminders, and hyperarousal (eg, insomnia, hypervigilance).

Educational objective:
Depersonalization/derealization disorder is a dissociative disorder involving recurrent episodes of feeling detached from one's body or surroundings and/or feelings of unreality.

References

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An 18-year-old woman comes to the office to discuss her pain medication. Five months ago, the patient fractured her vertebrae in a ski accident, requiring surgery and prolonged postsurgical rehabilitation. Since the accident, she has been prescribed hydrocodone/acetaminophen 4 times a day for pain. The patient's pain is adequately controlled and does not interfere with day-to-day activities. Over the past month, she has tried to stop the medication, but each time, she develops rhinorrhea, lacrimation, and vomiting, requiring her to take it to relieve the discomfort. The patient has reduced hydrocodone/acetaminophen intake from 4 to 3 times daily and cannot reduce it further due to these symptoms. She is anxious and frustrated about not being able to discontinue it. Urine drug screen is positive for hydrocodone only. A review of the state prescription drug monitoring database reveals no other controlled substances or irregularities. Which of the following best describes this patient's condition?

- A. Misuse
- B. Opioid use disorder
- C. Physical dependence
- D. Tolerance

Submit

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- A. Misuse (2%)
- ✗ B. Opioid use disorder (8%)
- ✓ C. Physical dependence (85%)
- D. Tolerance (3%)

Incorrect
Correct answer
C

85%
Answered correctly

04 secs
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Explanation

Complications of chronic opioid use	
Tolerance	• Increased dose needed to achieve same pain relief

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Complications of chronic opioid use	
Tolerance	• Increased dose needed to achieve same pain relief
Physical dependence	• Development of withdrawal symptoms after abrupt opioid cessation • Opioid use remains controlled
Opioid use disorder	• Uncontrolled opioid craving and use despite harm (eg, social, professional)

This patient on chronic opioid therapy has adequate pain control and is attempting to decrease the medication dose. However, she has features of **physical dependence** characterized by significant **withdrawal symptoms** (eg, vomiting, diarrhea, lacrimation, sweating) on discontinuation or decreased dosage.

Opioid binding to mu opioid receptors inhibits the presynaptic release of pain neurotransmitters (eg, substance P, glutamate, calcitonin gene–related peptide). With continued use, opioids can induce receptor down-regulation and desensitization. Subsequently, loss of receptor activation due to reduction or cessation of the medication can cause withdrawal symptoms, as in this patient. Management of physical dependence may require a **prolonged, scheduled taper** of the medication, often with the assistance of a pain-management specialist.

(Choice A) Opioid misuse is defined as using opioids in a way that deviates from their prescribed dosage (eg, overuse) or purpose (eg, relieving anxiety, sharing with or selling pills to others). It also includes obtaining opioids from multiple prescribers or taking nonprescribed controlled substances. This patient has no features of opioid misuse.

(Choice B) Opioid use disorder is characterized by uncontrolled use despite harmful consequences (eg, social, professional). Although this patient exhibits withdrawal symptoms, her opioid use remains controlled. Also, her primary focus is stopping opioid therapy rather than securing the next dose, which is a feature common in patients with opioid use disorder.

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(Choice B) Opioid use disorder is characterized by uncontrolled use despite harmful consequences (eg, social, professional). Although this patient exhibits withdrawal symptoms, her opioid use remains controlled. Also, her primary focus is stopping opioid therapy rather than securing the next dose, which is a feature common in patients with opioid use disorder.

(Choice D) Opioid tolerance refers to increasing dose requirements to achieve the same pain control. Tolerance is commonly seen in patients with physical dependence, but would not explain this patient's withdrawal symptoms upon attempted dose reduction.

Educational objective:
Chronic opioid therapy can lead to tolerance (ie, increased amount of opioids to achieve the same pain relief), physical dependence (ie, development of withdrawal symptoms after abrupt cessation), and opioid use disorder (ie, uncontrolled use despite harmful effects).

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A 35-year-old man was hospitalized for a psychotic episode in which he heard voices of God and the devil and believed that his family was plotting to kill him. He improved rapidly with medication therapy and was discharged. Three weeks later, the patient comes to the emergency department due to generalized muscle stiffness and shaking of his right hand. He has no other medical history and takes no other medications. Temperature is 36.7 C (98 F), blood pressure is 110/80 mm Hg, pulse is 68/min, and respirations are 14/min. On mental status examination, he is alert and oriented with mild paranoia but no auditory hallucinations. Which of the following is the best treatment for this patient's current symptoms?

- A. Benztropine
- B. Dantrolene
- C. Diazepam
- D. Haloperidol
- E. Levodopa
- F. Propranolol

Submit

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- ✓ A. Benztropine (52%)
- ✗ B. Dantrolene (19%)
- C. Diazepam (8%)
- D. Haloperidol (8%)
- E. Levodopa (6%)
- F. Propranolol (4%)

Incorrect
Correct answer
A

52%
Answered correctly

04 secs
Time Spent

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Explanation

Drug-induced parkinsonism	
Etiology:	• D2 receptor blockers • Antipsychotics (First generation > second generation)

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Drug-induced parkinsonism	
Etiology	• D2 receptor blockers ◦ Antipsychotics (First-generation > second-generation) ◦ Antiemetics/gastric motility agents (prochlorperazine, metoclopramide)
Symptoms	• Prominent rigidity & bradykinesia (slowed movement, decreased arm swing) • Tremor (rest & postural) • Masked facies
Management	• Decrease or discontinue offending medication • Anticholinergics (trihexyphenidyl, benztropine)

This patient's psychotic episode was most likely treated with an antipsychotic, and his current symptoms are consistent with **drug-induced parkinsonism**, an extrapyramidal side effect of antipsychotics. Symptoms include **rigidity** (may be experienced as subjective stiffness), **resting/postural tremor**, **masked facies**, and **bradykinesia** and typically occur within the first 3 months of drug initiation. Other extrapyramidal side effects of antipsychotic medications include acute dystonia (sudden, sustained contraction of muscle groups) and akathisia (subjective restlessness and inability to sit still).

Drug-induced parkinsonism is caused by **dopamine (D2) receptor blockade** in the **nigrostriatal pathway**. If the antipsychotic cannot be reduced or discontinued, drug-induced parkinsonism is best treated with a centrally acting **anticholinergic agent** (eg, benztropine). Levodopa should not be used to treat antipsychotic-induced parkinsonism as it can exacerbate or even precipitate psychosis **(Choice E)**.

(Choice B) Dantrolene is a direct-acting skeletal muscle relaxant used in the treatment of neuroleptic malignant syndrome (NMS). NMS presents with diffuse muscle rigidity, high fever, sympathetic hyperactivity (eg, hypertension, tachycardia), and altered mental status and is unlikely in this oriented, afebrile patient with normal vital signs.

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(Choices C and F) The benzodiazepine diazepam and the beta blocker propranolol may both be used in the treatment of akathisia. Akathisia is characterized by subjective restless and an inability to sit still rather than rigidity and tremor, as seen in this patient.

(Choice D) Haloperidol is a first-generation antipsychotic and potent D2 blocker that frequently causes extrapyramidal symptoms, including drug-induced parkinsonism. Its use would only exacerbate the patient's parkinsonian symptoms. Use of a second-generation antipsychotic with minimal D2 blockade would be a reasonable long-term alternative if the patient were taking a first-generation antipsychotic.

Educational objective:
Drug-induced parkinsonism is an extrapyramidal side effect caused by medications that block D2 receptors (eg, antipsychotics). Management strategies include decreasing or discontinuing the offending medication and

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rigidity (may be experienced as subjective stiffness), **resting/postural tremor**, **masked facies**, and **bradykinesia** and typically occur within the first 3 months of drug initiation. Other extrapyramidal side effects of antipsychotic medications include acute dystonia (sudden, sustained contraction of muscle groups) and akathisia (subjective restlessness and inability to sit still).

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Educational objective:
Drug-induced parkinsonism is an extrapyramidal side effect caused by medications that block D2 receptors (eg, antipsychotics). Management strategies include decreasing or discontinuing the offending medication and treatment with an anticholinergic medication.

References

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A 32-year-old woman comes to the office due to long-standing anxiety. She reports being excessively worried about everyday events and constantly feeling tense and unable to relax. The patient is diagnosed with generalized anxiety disorder and treated with a selective serotonin reuptake inhibitor. She returns to the office for a 2-month follow-up and reports that her overall anxiety has improved, but she continues to have periods of increased anxiety before bedtime that keep her awake at night. The patient works as a 911 emergency dispatch operator and would be willing to add a medication at bedtime but needs to be "clearheaded" for work. Which of the following medications is most appropriate for this patient's condition?

- A. Chlordiazepoxide
- B. Diazepam
- C. Flurazepam
- D. Lorazepam
- E. Quetiapine

Submit

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- A. Chlordiazepoxide (19%)
- ✗ B. Diazepam (16%)
- C. Flurazepam (9%)
- ✓ D. Lorazepam (34%)
- E. Quetiapine (20%)

Incorrect
Correct answer
D

34%
Answered correctly

04 secs
Time Spent

2023
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Explanation

Duration of action of common benzodiazepines	
Short (half-life <6 hr)	Triazolam, midazolam

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Duration of action of common benzodiazepines	
Short (half-life <6 hr)	Triazolam, midazolam
Intermediate (half-life 6-50 hr)	Oxazepam, alprazolam, lorazepam, clonazepam
Long (half-life >50 hr)	Diazepam, chlordiazepoxide, flurazepam

Although antidepressants (selective serotonin reuptake inhibitors and serotonin-norepinephrine reuptake inhibitors) are first-line medications for generalized anxiety disorder (GAD), benzodiazepines are also effective and can be used as adjuncts in partial responders. Benzodiazepines are typically divided into categories based on their half-lives (eg, short, intermediate, long).

In selecting a benzodiazepine for this patient, it is important to minimize undesirable **side effects** (eg, sedation, fatigue, impaired judgment), especially given the nature of her work. This is best achieved by prescribing a **short-** or **intermediate-acting benzodiazepine** such as **lorazepam** (average half-life of 12 hours) at bedtime, which will lower her anxiety, help her fall asleep, and be less likely to impair her daytime cognitive performance. Benzodiazepines with longer elimination half-lives are associated with prolonged side effects and should be avoided when trying to minimize side effects.

(Choices A, B, and C) Chlordiazepoxide, diazepam, and flurazepam have longer durations of action compared to lorazepam. These agents are more likely to result in prolonged side effects (eg, daytime sedation, impaired judgment), which are undesirable considering this patient's job.

(Choice E) Quetiapine is a second-generation antipsychotic that is associated with numerous potentially severe side effects, including sedation, weight gain, and metabolic syndrome. It is not recommend for treating insomnia in

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Long (half-life >50 hr)	Diazepam, chlordiazepoxide, flurazepam

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(Choice E) Quetiapine is a second-generation antipsychotic that is associated with numerous potentially severe side effects, including sedation, weight gain, and metabolic syndrome. It is not recommend for treating insomnia in patients without psychosis.

Educational objective:
When benzodiazepines are used in the treatment of anxiety, drug selection should consider the medication's duration of action. Short- to intermediate-acting benzodiazepines (eg, lorazepam) are preferred in situations in which prolonged side effects of sedation and cognitive impairment must be minimized.

References

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A 36-year-old woman comes to the office for follow-up of a mood disorder. The patient has a history of several depressive episodes that started in her twenties. Two years ago, she was hospitalized after staying up for several nights without sleeping and claiming that she had special powers to "end global poverty and climate change." Her symptoms responded well to treatment and she has remained on the same drug regimen since then. However, the patient now has new-onset constipation, dry skin, and hair loss. She is also concerned about a weight gain of 2.27 kg (5 lb) over the last 3-4 months despite eating healthy, low-calorie foods. Blood pressure is 110/70 mm Hg and pulse is 55/min. The patient appears tired, but physical examination is otherwise normal. The diagnosis is established and her current condition is attributed to adverse effects from one of her medications. Which of the following is the most likely culprit drug?

- A. Carbamazepine
- B. Citalopram
- C. Clozapine
- D. Lamotrigine
- E. Lithium
- F. Risperidone
- G. Trazodone

Submit

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- A. Carbamazepine (3%)
- ✗ B. Citalopram (3%)
- C. Clozapine (15%)
- D. Lamotrigine (3%)
- ✓ E. Lithium (64%)
- F. Risperidone (9%)
- G. Trazodone (1%)

Incorrect
Correct answer
E

64%
Answered correctly

03 secs
Time Spent

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Explanation

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Mood stabilizers in bipolar disorder		
	Indications	**Adverse effects**
Lithium	• Manic & depressive features	• Diabetes insipidus • Hypothyroidism • Tremor • Ebstein anomaly (teratogenic)
Valproate	• Manic features	• Hepatotoxicity • Neural tube defects (teratogenic)
Carbamazepine	• Manic features	• Aplastic anemia • SIADH • Neural tube defects (teratogenic)
Lamotrigine	• Depressive features	• Benign rash • Stevens-Johnson syndrome
SIADH = syndrome of inappropriate antidiuretic hormone secretion.		

This patient's weight gain, hair loss, and mild bradycardia are most likely due to lithium-induced hypothyroidism. **Lithium** is a mood stabilizer primarily used in the treatment of bipolar disorder. It can cause **hypothyroidism** by interfering with normal synthesis and release of thyroid hormone. The compensatory increase in TSH release by the pituitary can lead to goiter in some patients. Lithium-induced hypothyroidism is treated with standard levothyroxine (T4) replacement and does not require discontinuation of lithium therapy.

Long-term lithium therapy is also associated with adverse effects on renal function (eg, **nephrogenic diabetes insipidus**, chronic tubulointerstitial nephropathy), requiring regular monitoring of blood lithium levels and renal function (blood urea nitrogen and creatinine). Lithium use during pregnancy has been associated with **Ebstein**

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(Choices A and D) Carbamazepine and lamotrigine are anticonvulsants that are also used as mood stabilizers in bipolar disorder. Carbamazepine can cause aplastic anemia. Lamotrigine is associated with a risk of rash, including potentially life-threatening Stevens-Johnson syndrome.

(Choice B) Citalopram is a selective serotonin reuptake inhibitor (SSRI) antidepressant. Sexual dysfunction is the most common long-term side effect. SSRIs are not used as monotherapy in bipolar disorder and are not associated with hypothyroidism.

(Choice C) Clozapine, a second-generation antipsychotic indicated for treatment-refractory schizophrenia, is associated with agranulocytosis and requires regular monitoring of the absolute neutrophil count. Although clozapine can cause weight gain and constipation, it is not a first-line treatment for mood disorders and would not explain this patient's other hypothyroid features (eg, dry skin, hair loss, bradycardia).

(Choice F) Risperidone is a second-generation antipsychotic that can cause weight gain and hyperprolactinemia (eg, galactorrhea, amenorrhea). It is not associated with hypothyroidism.

(Choice G) Trazodone is an antidepressant that has significant sedating effects and is most commonly used to treat depression-related insomnia. Other adverse effects include priapism (prolonged painful erection) and

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levothyroxine (T4) replacement and does not require discontinuation of lithium therapy.

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(Choice G) Trazodone is an antidepressant that has significant sedating effects and is most commonly used to treat depression-related insomnia. Other adverse effects include priapism (prolonged painful erection) and anticholinergic effects (eg, dry mouth, constipation).

Educational objective:
Hypothyroidism and nephrogenic diabetes insipidus are the most common adverse effects of long-term lithium therapy. Serum TSH and renal function (blood urea nitrogen and creatinine) should be monitored routinely.

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A 43-year-old woman comes to the office for an initial appointment due to ongoing abdominal pain, general weakness, decreased appetite, and dizziness. She says the pain is ruining her life and is worried that her previous physicians may have missed something. Over the past several years, the patient has been hospitalized 3 times with similar symptoms. No etiology for the pain has been identified despite extensive workups, including several abdominal CT scans and an exploratory laparotomy. The patient describes chronic abdominal pain since adolescence and is concerned as the nonprescription analgesics she takes are ineffective. She has no history of psychiatric diagnoses or substance abuse. Physical examination, vital signs, and laboratory tests (including chemistry panel, complete blood count, and urinalysis) are within normal limits. Which of the following is the most appropriate next step in the management of this patient?

- A. Explain that symptoms are psychological in nature
- B. Obtain gastroenterology consult
- C. Order abdominal MRI scan
- D. Prescribe an opioid analgesic
- E. Reassure that all tests are negative and further workup is not indicated
- F. Refer for psychiatric treatment
- G. Schedule regular outpatient office visits

Submit

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A 43-year-old woman comes to the office for an initial appointment due to ongoing abdominal pain, general weakness, decreased appetite, and dizziness. She says the pain is ruining her life and is worried that her previous physicians may have missed something. Over the past several years, the patient has been hospitalized 3 times with similar symptoms. No etiology for the pain has been identified despite extensive workups, including several abdominal CT scans and an exploratory laparotomy. The patient describes chronic abdominal pain since adolescence and is concerned as the nonprescription analgesics she takes are ineffective. She has no history of psychiatric diagnoses or substance abuse. Physical examination, vital signs, and laboratory tests (including chemistry panel, complete blood count, and urinalysis) are within normal limits. Which of the following is the most appropriate next step in the management of this patient?

- A. Explain that symptoms are psychological in nature (6%)
- B. Obtain gastroenterology consult (3%)
- ✗ C. Order abdominal MRI scan (1%)
- D. Prescribe an opioid analgesic (1%)
- E. Reassure that all tests are negative and further workup is not indicated (13%)
- F. Refer for psychiatric treatment (16%)
- ✓ G. Schedule regular outpatient office visits (56%)

Incorrect
Correct answer
G

56%
Answered correctly

04 secs
Time Spent

2023
Version

Explanation

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Management of somatic symptom disorder

• Schedule **regular visits** with **same provider**
• Limit unnecessary workup & referral to specialists
• Reassure that serious illness has been ruled out
• Legitimize symptoms but make functional improvement the treatment goal
  ◦ Decrease stress
  ◦ Improve coping strategies
• Mental health referral only once physician-patient relationship is well established

This patient's preoccupation with unexplained medical symptoms and excessive health care use are characteristic of **somatic symptom disorder**. The best approach is to schedule **regular visits** with her primary care provider, who can monitor her condition and **avoid unnecessary diagnostic testing** and **specialist referrals (Choices B and C)**.

In contrast to symptom-driven visits, regular visits provide patients with an opportunity to discuss their concerns without the need to have new or worsening symptoms. This may decrease the use of emergency services and encourage formation of a therapeutic alliance. Rather than focusing on symptom elimination, office visits should emphasize a return to occupational and social activities (functional improvement) and promotion of stress reduction and healthy behaviors (eg, diet, exercise).

(Choices A and F) This patient currently has no insight into the psychological nature of her disorder and would likely feel invalidated and unreceptive to being told that her condition is psychogenic and/or by getting referred to a psychiatrist for treatment. Once a physician-patient relationship is established, she may be able to accept that psychological distress plays a role in her condition and be more receptive to psychiatric referral.

(Choice D) Use of potentially addictive pain medication should be avoided.

(Choice E) Reassurance alone is rarely effective in managing somatic symptom disorder. Optimal management

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- Decrease stress
- Improve coping strategies

- Mental health referral only once physician-patient relationship is well established

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(Choice D) Use of potentially addictive pain medication should be avoided.

(Choice E) Reassurance alone is rarely effective in managing somatic symptom disorder. Optimal management consists of regularly scheduled visits so that the patient does not need to have active symptoms to justify a visit.

Educational objective:
Somatic symptom disorder is best managed with regularly scheduled medical visits that are not contingent on having active symptoms. Unnecessary diagnostic testing and specialist referrals should be avoided.

References

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A 28-year-old man comes to the office at his wife's insistence. He reports severe insomnia but otherwise feels physically healthy. His wife is concerned that the patient is having a difficult time since returning from military duty. She says, "He used to be so upbeat and easygoing. Now his moods fluctuate between really tense and on edge to detached and numb." The patient cannot fall asleep at night because, as soon as he closes his eyes, he sees the horrific scene of his friend being blown up after stepping on a landmine. During the day, he is hypersensitive to loud sounds such as firecrackers or a car backfiring. The patient says, "Sometimes I feel as if I'm back in combat and have to duck and take cover." Vital signs are within normal limits, and physical examination shows no abnormalities. On mental status examination, the patient has an anxious mood and blunted affect. Which of the following is the most appropriate pharmacotherapy?

- A. Antipsychotic
- B. Benzodiazepine
- C. Monoamine oxidase inhibitor
- D. Mood stabilizer
- E. Non-benzodiazepine hypnotic
- F. Selective serotonin reuptake inhibitor
- G. Tricyclic antidepressant

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A 28-year-old man comes to the office at his wife's insistence. He reports severe insomnia but otherwise feels physically healthy. His wife is concerned that the patient is having a difficult time since returning from military duty. She says, "He used to be so upbeat and easygoing. Now his moods fluctuate between really tense and on edge to detached and numb." The patient cannot fall asleep at night because, as soon as he closes his eyes, he sees the horrific scene of his friend being blown up after stepping on a landmine. During the day, he is hypersensitive to loud sounds such as firecrackers or a car backfiring. The patient says, "Sometimes I feel as if I'm back in combat and have to duck and take cover." Vital signs are within normal limits, and physical examination shows no abnormalities. On mental status examination, the patient has an anxious mood and blunted affect. Which of the following is the most appropriate pharmacotherapy?

- A. Antipsychotic (1%)
- ✗ B. Benzodiazepine (8%)
- C. Monoamine oxidase inhibitor (1%)
- D. Mood stabilizer (3%)
- E. Non-benzodiazepine hypnotic (2%)
- ✓ F. Selective serotonin reuptake inhibitor (80%)
- G. Tricyclic antidepressant (2%)

Incorrect
Correct answer
F

80%
Answered correctly

03 secs
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Explanation

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Posttraumatic stress disorder	
Clinical features	• Exposure to life-threatening trauma • Nightmares, flashbacks, intrusive memories • Avoidance of reminders, dissociation • Emotional detachment, negative mood, decreased interest in activities • Sleep disturbance, hypervigilance, irritability • Duration >1 month
Treatment	• Trauma-focused cognitive-behavioral therapy • Antidepressants (SSRIs, SNRIs)
SNRIs = serotonin-norepinephrine reuptake inhibitors; **SSRIs** = selective serotonin reuptake inhibitors.	

This patient's sleep disturbance, tense moods, feelings of detachment, intrusive images, hypervigilance, and flashbacks are characteristic of **post-traumatic stress disorder** (PTSD). First-line treatment consists of trauma-focused cognitive behavioral therapy and antidepressant medication. **Selective serotonin reuptake inhibitors (SSRIs)** have the best evidence for efficacy, and serotonin-norepinephrine reuptake inhibitors (SNRIs) are also commonly used. Although patients with PTSD commonly experience anxiety, hyperarousal, and insomnia, there is little evidence to support the use of benzodiazepines and non-benzodiazepine hypnotics **(Choices B and E)**.

(Choice A) Antipsychotics are not a first-line treatment for PTSD. They may have a limited role as augmentation in patients who have inadequate response to an SSRI/SNRI.

(Choices C and G) The older antidepressants (monoamine oxidase inhibitors and tricyclic antidepressants) are used as second-line treatments for depression, but they have not been shown to be effective in PTSD.

(Choice D) Mood stabilizers (eg, lithium, anticonvulsants with mood-stabilizing properties) have a major role in treating bipolar disorders, but they have not proven effective in treating PTSD.

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	• Sleep disturbance, hypervigilance, irritability • Duration >1 month
Treatment	• Trauma-focused cognitive-behavioral therapy • Antidepressants (SSRIs, SNRIs)
SNRIs = serotonin-norepinephrine reuptake inhibitors; **SSRIs** = selective serotonin reuptake inhibitors.	

This patient's sleep disturbance, tense moods, feelings of detachment, intrusive images, hypervigilance, and flashbacks are characteristic of **post-traumatic stress disorder** (PTSD). First-line treatment consists of trauma-focused cognitive behavioral therapy and antidepressant medication. **Selective serotonin reuptake inhibitors (SSRIs)** have the best evidence for efficacy, and serotonin-norepinephrine reuptake inhibitors (SNRIs) are also commonly used. Although patients with PTSD commonly experience anxiety, hyperarousal, and insomnia, there is little evidence to support the use of benzodiazepines and non-benzodiazepine hypnotics **(Choices B and E)**.

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(Choice D) Mood stabilizers (eg, lithium, anticonvulsants with mood-stabilizing properties) have a major role in treating bipolar disorders, but they have not proven effective in treating PTSD.

Educational objective:
First-line treatment for post-traumatic stress disorder includes trauma-focused cognitive-behavioral therapy and antidepressant medication. Selective serotonin reuptake inhibitors have the best evidence for efficacy.

References

- Evidence-based pharmacotherapy of post-traumatic stress disorder (PTSD).

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A 60-year-old woman comes to the office due to uncontrollable movements that have worsened. Medical history is significant for hypertension, hyperlipidemia, osteoarthritis, and schizophrenia, and she has been on a stable medication regimen for years. Throughout the interview, she exhibits facial grimacing, lip smacking, and twisting movements of her hands and feet. The patient has lived in a group home for many years and worries that her housemates are avoiding her because her symptoms make her look "strange." On mental status examination, the patient makes poor eye contact and is generally distrustful but has no specific delusions or hallucinations. Which of the following is the most likely diagnosis?

- A. Acute dystonia
- B. Acute psychotic episode
- C. Akathisia
- D. Neuroleptic-induced parkinsonism
- E. Neuroleptic malignant syndrome
- F. Tardive dyskinesia
- G. Tic disorder

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A 60-year-old woman comes to the office due to uncontrollable movements that have worsened. Medical history is significant for hypertension, hyperlipidemia, osteoarthritis, and schizophrenia, and she has been on a stable medication regimen for years. Throughout the interview, she exhibits facial grimacing, lip smacking, and twisting movements of her hands and feet. The patient has lived in a group home for many years and worries that her housemates are avoiding her because her symptoms make her look "strange." On mental status examination, the patient makes poor eye contact and is generally distrustful but has no specific delusions or hallucinations. Which of the following is the most likely diagnosis?

- A. Acute dystonia (2%)
- ✗ B. Acute psychotic episode (0%)
- C. Akathisia (6%)
- D. Neuroleptic-induced parkinsonism (6%)
- E. Neuroleptic malignant syndrome (1%)
- ✓ F. Tardive dyskinesia (80%)
- G. Tic disorder (3%)

Incorrect
Correct answer
F

80%
Answered correctly

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Explanation

Important antipsychotic side effects	

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Important antipsychotic side effects	
Extrapyramidal side effects	• Acute dystonic reaction: sudden-onset, sustained muscle contractions • Akathisia: subjective restlessness with inability to sit still • Drug-induced parkinsonism: tremor, rigidity, bradykinesia, masked facies
Tardive dyskinesia	• Involuntary movements after chronic use (eg, lip smacking, choreoathetoid movements)
Neuroleptic malignant syndrome	• Fever, rigidity, mental status changes, autonomic instability

This patient has a diagnosis of schizophrenia and has likely been treated with antipsychotic medications for many years. Her abnormal movements are characteristic of **tardive dyskinesia** (TD), a movement disorder associated with **long-term treatment** with **dopamine antagonist medications** (eg, antipsychotics, metoclopramide). Possible mechanisms of TD include development of hypersensitive post-synaptic D2 receptors following prolonged D2 blockade and an imbalance between D1 and D2 receptor-mediated effects.

TD typically consists of **repetitive, rhythmic, involuntary movements** of the **tongue, lips, face, trunk**, and **extremities**. Orofacial dyskinesias (eg, facial grimacing, tongue movements, lip smacking and puckering) are most common, but choreoathetoid movements of the trunk and limbs can also occur. Older age and exposure to first-generation antipsychotics increase the risk of developing TD. Treatment typically includes discontinuing the offending agent when feasible.

(Choices A, C, and D) TD can be differentiated from acute extrapyramidal syndromes that also result from exposure to dopamine antagonists. Acute dystonia involves a distressing, sustained, involuntary contraction of the neck, mouth, tongue, or eye muscles that typically occurs within the first few days of receiving a dopamine antagonist. Akathisia is characterized by physical restlessness, difficulty sitting still, and a compelling need to move. Drug-induced parkinsonism manifests with tremor, bradykinesia, and cogwheel rigidity.

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(Choice B) Poor eye contact and general distrust are symptoms that frequently persist in patients treated with antipsychotics during the maintenance phase of schizophrenia. Signs and symptoms of an acute psychotic episode include delusions, hallucinations, and disorganized speech and behavior.

(Choice E) Neuroleptic malignant syndrome, which is also an adverse reaction related to antipsychotic treatment, is a rare and potentially fatal syndrome characterized by delirium, high fever, severe muscle rigidity, and autonomic instability.

(Choice G) The characteristic feature of all tic disorders involves brief, recurrent, nonrhythmic motor movements (eg, eye blinking) and/or vocalizations (eg, grunting), beginning in childhood.

Educational objective:
Tardive dyskinesia consists of abnormal involuntary movements of the mouth, tongue, face, extremities, or trunk associated with prolonged exposure to antipsychotics. Characteristic movements include lip smacking, facial grimacing, tongue protrusions, and choreoathetoid movements of the head, limbs, and trunk.

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